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The Second International Health Specialties Conference has just drawn to its close. By any measure participants considered it a success, and so what were the highlights? The invited international speakers were out of the top draw of medical education with two Karolinska prize winners for lifetime achievements in medical education, the leading exponent of CanMEDS, two editors-in-chief of major health science journals and two leaders of the new era of medical education in simulation and E-learning technologies. It was, therefore, appropriate that the theme for the conference was “A New Era of Medical Education.”

Saturday started with thirteen workshops given at the main conference venue and the simulation Centre at King Fahad Medical City. Over 2,200 applications were received for these workshops and in the end only 700 could be accepted, one workshop being oversubscribed 6-fold. It was estimated that over 1,500 participants registered for the two main conference days, which were full of stimulating presentations. It would be difficult to single out the outstanding keynote, but many present at the debate seemed to enjoy this novel form of interaction between the discussants and the floor of the auditorium. The motion proposed was that E-learning was better that not to E-learn, and at the end resulted in tied result, seemingly proving right one of the speakers from the floor, Professor Mike Parker, President of the Royal Surgeons, England.

Many participants have asked for the PowerPoint presentations used by the international speakers and these will be made available on the conference website www.scfhs.org.sa/en/education/conference/Pages/Default.aspx.

Another highlight this time were the booths generously provided by the Saudi Commission, providing an opportunity for 25 resident program providers to talk about their offerings. There were no less than 10 overseas’ institutions including five royal colleges. It is hoped that this will become a regular feature of the Commission’s Health Specialty conferences. In the same hall were the posters presented by 146 residents, fellows, interns and medical students. The quality was high and once again this part of the conference was considered very worthwhile. The intention always was to provide an opportunity for younger colleagues to present their research, surveys and case studies. It was notable that the only poster addressing an important educational issue among the prize winners was a medical student, Ms. Jumana Usama Sarraj. At the end of this editorial is a list of the prize winners both for the poster presentations and oral presentation, which also proved a very high standard fully justifying their selection by the abstract referees. It shall be stressed that many people contributed to the success of the conference, and the abstract reviewers are just one example among many very important contributions, without which the conference would not have been what it was.

The six local speakers and two simulation groups shall also be recognized for their outstanding contributions.

Last on the program, but certainly not least, were two Town Hall Forums. The international speakers made up the panels with several local experts to provide advice and answer questions for medical students and interns to help make career choices, while the other allowed residents to bring up issues that they felt important about their
training. Both meetings were a success, and it is hoped again they will continue as a tradition for the Commission’s conferences, whose focus is on postgraduate education.

At the end of this issue of the journal are the abstracts for both oral and poster presentations that were accepted, and meanwhile, below are our prize winners.

**ORAL PRESENTATION WINNER**

**POSTER WINNERS**

**Dentistry**
Salma Sami Al Shehab (Fellow) - Developing a course that prepares dental students in Saudi Arabia to deliver treatment to individuals with disabilities.

**Emergency medicine**
Abdalmohsen Abdulwahhab (Resident) - Ultrasonography for the diagnosis and management of patients with clinically suspected skin and soft tissue infections: Systematic review of the literature.

**Family medicine**
Afrah Ibrahim Babli (Resident) - General practitioners knowledge, attitude and practice regarding Vitamin D supplementation to infants in Dammam, Saudi Arabia: Does educational intervention improve the situation?

**Internal medicine**
Motih Hamad Al Abdulwahhab (Resident) - Prospective trial in Saudi Arabia comparing the 14-day standard triple therapy with the 10-day sequential therapy for treatment of *Helicobacter pylori* infection.

**Pathology**
Nahlah Salem Al Ghasham (Faculty) - Exon 12 - 15 comprehensive analysis using sanger sequencing to detect JAK2 mutation.

**Pediatrics**
Eman Ateyatallah Al Johani (Resident) - Diagnostic yield of colonoscopy in Saudi children with rectal bleeding: Experience from tertiary care center.

**General surgery**
Yazeed Othman Al Ofisan (Resident) - Laparoscopic sleeve gastrectomy as a solo procedure for management of morbid obesity: Case series with 6-year follow-up.

**Other specialties**
Jumana Usama Sarraj (Medical student) - Undergraduate medical research courses adapting to the demands of 21st Century.

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Factors related to blood donors that may affect the quality of platelet concentrates

Abdulmajeed Albayan
Department of Clinical Laboratory Sciences, College of Applied Medical Sciences, King Saud University, Riyadh, Saudi Arabia

ABSTRACT
This review is intended to summarize the literature in regard to blood donor-related platelet defects that might affect the quality of platelet concentrates (PCs). Donor-related platelet defects can be defined as all platelet defects, transient or permanent in nature, which may undermine the effectiveness of platelet therapy that are caused by factors related to the donor, and not due to collection, processing or storage. Although it seems that those factors might affect the quality of PCs, there is still significant work that needs to be done to understand their impact on the efficacy of platelet transfusion.

Keywords: Platelet concentrate, platelet function, platelet transfusion

INTRODUCTION
Platelets are small discoid enucleated cells with a diameter of 2.0 - 4.0 μm. They circulate for 7 - 10 days before being cleared, mainly by the reticuloendothelial system. Nearly 100 billion platelets are produced from megakaryocytes every day to maintain a normal count of 150 - 400 × 10⁹/L. Platelet transfusion is indicated to treat (therapeutic) or prevent (prophylaxis) bleeding in patients with thrombocytopenia or less commonly thrombocytopathy. However, the accurate diagnosis of the underlying abnormality is important as platelet transfusion in some thrombocytopenic conditions may be contraindicated (e.g., thrombotic thrombocytopenic purpura).

Millions of platelet concentrates (PCs) are transfused around the world every year.[1] A significant percentage of these PCs are used in the management of patients undergoing chemo-or radiotherapy where it has become an essential part of their therapy. However, this procedure can trigger serious side-effects. It also significantly adds to the cost of the patients’ therapy, particularly those who require frequent platelet transfusions.

Currently, platelet function is generally not assessed prior to donation in blood donors, prior to transfusion in PCs, nor after transfusion in the recipients’ blood.[2] Platelet transfusion effectiveness is monitored by measuring the corrected count increments, which is a rough measure of platelet survival, but provides little information on platelet function. Platelet function and survival are two different aspects, and the results of one cannot necessarily be extrapolated to the other. It is possible that the unexplained variation in the effectiveness of transfused PCs and the controversy over the optimal platelet dose and dosing interval are partly caused by the variation in the functional potential of PCs. This review aims at reviewing the literature in regards to factors affecting the function of platelets prior to donation. As for platelet function testing, there are several excellent reviews available in the literature on this subject.[3,4]

The PCs are increasingly being sourced from single donors (SD) via aphaeresis (SD - PC) in many countries around the world. In the USA, the use of SD - PC has exceeded that of the pooled PC since 1994.[2] Unlike pooled PCs, where the donor platelets’ quality is potentially less important as pooling may mask the defect from one donor, the donor quality is very important in the case of SD - PC.[5]
Donor-related platelet defects can be defined as all platelet defects, transient or permanent in nature, that may undermine the effectiveness of platelet therapy which are caused by factors related to the donor, and not due to collection, processing, or storage. Unlike some storage-induced defects, where they are reversible after transfusion, donor-related defects are unlikely to be reversible.[6] Those defects are particularly important when the platelet dose is largely derived from one donor, as in SD - PC, or when the recipient is an infant, receiving one platelet unit produced from the whole blood of one donor.

Theoretically, any donor with defective platelets should be deferred from the donation as transfusion of defective platelets would undermine the efficacy of platelet therapy. Currently, there is no routine testing of the donor platelets, and the quality of the donor platelets is largely assumed based on detailed questionnaires and physical examination. The questionnaires include questions about family history of bleeding and recent drug intake. Although this practice may exclude donors with severe defects, it might not detect those with mild or transient defects. Therefore, some donors, particularly with acquired platelet defects may not be identified.[6]

Due to the wide use of SD - PC, the donor variable in the equation of PC quality is becoming increasingly important. Donor-related platelet defects can be classified into defects associated with frequency of donation and influence of the apheresis procedure, and acquired defects caused by diet or drugs.


There are many factors that should be taken into consideration when studying the effect of platelet-pheresis on the donor platelets. These include: length of the interval between donations, the total number of donations, the number of units donated per session and the technology of the separator. Platelet-pheresis is generally considered as a safe procedure with minimum adverse effects.[7] However, the short- and long-term effects of this procedure on platelet function are not clear.

Some studies that investigated the effect of platelet-pheresis were mainly prompted by the results of other studies that detected the presence of in-vivo activated platelets after other forms of extracorporeal circulation. However, there is an essential difference between platelet-pheresis and other forms of extracorporeal circulation in that most platelets are collected and carried in a bag. Thus platelets, which might be activated by the procedure are not re-infused.[6]

THE SHORT-TERM EFFECTS OF THE APHERESIS PROCEDURE

Based on flow cytometric studies, platelet-pheresis seems not to cause platelet activation in-vivo. Many of these studies did not find activated platelets in-vivo post platelet-pheresis as assessed by the expression of CD62P, CD63 and CD42b using two different separators (Spectra LRS, MCS, Amicus-90 min and Amicus 45 min).[6] Moreover, no difference was found in the expression of CD62P, fibrinogen binding or PS of resting platelets when activated with thrombin receptor activation peptide. Further, Barnard et al., could not find differences between pre- and post-platelet-pheresis in the donors’ levels of CD62P, activated granulocytes or platelet-granulocyte aggregates.[12]

A study by Gutensohn et al., demonstrated an increase in CD62P and CD63 mean fluorescence index (MFI) post donation for up to 5 days.[13] However, the percentage of platelets expressing these markers was not measured in this study. Therefore, this increase in MFI may reflect only an increase of expression in a small fraction of cells, which may be as low as 1%.

Aggregation studies, however, seems to show that responsiveness to some agonists may be reduced in some donors post platelet-pheresis. Choi found that platelet aggregability to epinephrine is markedly reduced after platelet-pheresis and also some donors show non responsiveness to epinephrine or adenosine diphosphate (ADP). The aggregability to epinephrine, however, normalized within 24 - 72 h and even improved after 3 weeks.[14] In another study, some donors exhibited significant but slight reduction in aggregation to ADP after platelet-pheresis, which lasted for more than 4 h.[14] However, many studies, but not all,[15] did not find reduced aggregation in response to ADP plus epinephrine, collagen, or ristocetin after platelet-pheresis.[11,14] Differences between studies may be explained, in part, by the different types of separators that had been used.

Using platelet function analyser-100 (PFA-100), a slight but significant prolongation of the closure time (CT) of collagen/epinephrine (CEPI) following platelet-pheresis was found, but the mean CEPI CT post donation (204 s) was not very different from the upper limit of the normal range (194 s) and none of the donors had...
CT >300 s.\textsuperscript{[16]} Moreover, in a larger study, Boeßen and Clemetson found significant prolongation of the overall means of the CT of CEPI and collagen ADP (CADP) after plateletpheresis, but it still remained within normal ranges. A fraction of the donors had prolonged CEPI and CADP CTs (18% and 15% respectively) and 7% had CT >300 s.\textsuperscript{[10]} However, it is not clear for how long this effect will persist.

Taken together, these studies indicate that there is little or no \textit{in-vivo} platelet activation post platelet-pheresis. However, the responsiveness to weak agonists (ADP and epinephrine) may be transiently reduced after platelet-pheresis in some donors. The significance of this transient impairment is unknown.

**LONG-TERM EFFECTS OF PLATELET-PHERESIS**

It has been suggested that repeated donation may lead to the production of dysfunctional platelets due to intense or exhaustion of thrombopoiesis.\textsuperscript{[17]} It has also been reported that reticulated platelets, mean platelet volume\textsuperscript{[18,19]} and thrombopoietin (TPO)\textsuperscript{[20]} increase significantly after platelet-pheresis and this may persist for few days. The increase in TPO levels would be expected as the decrease in platelet numbers decreases the availability of TPO receptors. Nevertheless, an American retrospective study found that donors who regularly donated for 4 years had sustained and a significant decrease in platelet counts indicating a possible effect of platelet-pheresis on thrombopoiesis. Interestingly, the number of donations directly correlated with the decrease in platelet count. In contrast, Stohlauwetz did not find any difference in platelet count post donation between 1\textsuperscript{st}-time platelet-pheresis donors and regular donors who donated for 18 months every 2 weeks.\textsuperscript{[19]} The long-term effect is therefore not clear, and large prospective studies are important to determine the effect of platelet-pheresis on thrombopoiesis.

**THE EFFECT OF THE FREQUENCY OF DONATION**

According to the UK blood transfusion guidelines, the minimum interval between platelet-pheresis donation is 48 h with a maximum of 2 procedures per week and 24 procedures per year. Repeat platelet-pheresis procedures on less than 2-week basis for 1 year have been found, in remunerated donors, to significantly correlate, though weakly, with prolonged CEPI CTs values.\textsuperscript{[1]} This however should be interpreted with caution as remunerated donors are more likely to withhold some information (e.g., aspirin intake) that may lead to their deferral, particularly if we know that short donation intervals also correlated with low TXB2 levels in this study. In a more recent study in volunteer donors, no correlation was found between decreasing donation frequency (>60% donated on 4 - 10 week basis) and long CEPI or CADP.\textsuperscript{[6]}

**ACQUIRED PLATELET DEFECTS DUE TO DRUGS OR DIET**

More than 100 components of foods, drugs or vitamins have been shown to cause potential platelet defects.\textsuperscript{[21,22]} In addition, exercise,\textsuperscript{[23]} smoking,\textsuperscript{[24]} and major depression\textsuperscript{[25]} have been shown to alter platelet function. Among all of these factors that may affect platelet function, the effect of diet and drug on platelets and particularly in relation to platelet donors will be discussed next.

**DIET-INDUCED PLATELET FUNCTION DEFECTS**

Many components of commonly consumed foods have been suggested to alter platelet function, mainly based on \textit{ex-vivo} or \textit{in-vitro} studies.\textsuperscript{[26]} However, the clinical significance of many of the diet-induced platelet defects is not clear. Further, the effect of these defects on the effectiveness of platelets transfusion or how it influences the classical platelet storage lesion is largely unexplored. The duration of the effect on platelets is also not clear for many of these components. Some components, however, seem to affect platelets transiently. Blood donors are advised to eat before donation and even though the effect of these components disappears within hours some donors may donate \textit{ex vivo} functionally defective platelets. For example, in a study\textsuperscript{[27]} 2 of 24 whole blood donors had CEPI CT of ≥300s, which they suggested to be due to chocolate consumption 6 h before donation. In here, some examples of food components that affect platelet function and their mechanism of action will be discussed briefly.

Several epidemiological studies have shown correlation between consumption of certain foods, flavonoid-containing food and reduced cardiovascular disease risk and mortality rate.\textsuperscript{[28]} which is thought to be partly due to the ability of these components to inhibit platelet function, in addition to improving endothelial function.\textsuperscript{[29]}

Therefore, flavonoids, which can be found in tea and grape juice, have been extensively studied to determine their effect on platelets. An important \textit{in-vivo} study by Demrow \textit{et al.} demonstrated the ability of flavonoids to inhibit platelet aggregation in dogs, after acute
Intragastric injection of red wine or grape juice.\[30\] Similarly, it has been shown that ex-vivo aggregation in response to collagen decreased significantly (77%) after drinking purple grape juice for 1 week.\[31\]

Inhibition of TXA₂-induced platelet activation seems to be a common target for many food components. For example, production of TXA₂ was reduced ex-vivo\[32\] and in-vitro by ginger and oil of cloves, respectively. Recently, a number of mechanisms for this inhibition have been suggested such as blockade of the thromboxane receptor by some types of flavonoids\[33\] and interference with the TXA₂ production pathway (by inhibiting both AA liberation and TXA₂ synthesis).\[34\] Components acting via the former mechanism may produce an aspirin-like defect when stimulated with AA; however, those acting via the latter mechanism may produce a similar aspirin defect when stimulated with AA or tested for TXB₂ generation.

Further, a similar aspirin pattern on the PFA-100 test has also been reported 2 - 6 h after consumption of cocoa\[35,36\] and chocolate.\[27,37\] How these in-vitro results, which resemble some aspects of aspirin, translate to the hemostatic function of platelets in-vivo is not fully clear.

Other mechanisms of platelet function inhibition by dietary components may include blocking the vWF binding site on GPIIbα as suggested for flavone-8-acetic acid (flavonoid). This component, which inhibits ristocetin induced platelet agglutination in-vitro, has been shown to reduce platelet deposition on the site of injury in-vivo.\[38\] Since the PFA-100 is a high shear system, the inability of vWF to bind GPIIbα might prolong the CT on both cartridges. In contrast, a component of garlic has been found to inhibit thrombus formation at low and high shear rate, but it did not impair ristocetin-induced agglutination.\[39\] Moreover, many flavonoids have been shown to inhibit dense granule release in response to AA, collagen or the thromboxane analog (U46619).\[40\] Furthermore, CADP CT has been shown to be prolonged 2 and 6 h following consumption of chocolate\[37\] or caffeine beverages.\[36\] Finally, the effect of food components is not only inhibitory, but may also induce platelet activation.\[41\]

**DRUG-INDUCED PLATELET FUNCTION DEFECTS**

There are many drugs that can affect platelet function; however, the intention here will be mainly devoted to nonsteroidal anti-inflammatory drugs (NSAIDs). This is because platelet donors are not likely to be on drugs for chronic or serious diseases. Some NSAIDs, including aspirin, are over-the-counter drugs (without prescription) that are commonly used and not considered as a drug by some donors. Therefore, such drug intake may not be declared before donation.

**NONSTEROIDAL ANTI-INFLAMMATORY DRUGS**

Nonsteroidal anti-inflammatory drugs are heterogeneous group of drugs that share a common mechanism of action, inhibition of prostaglandin synthesis. NSAIDs are among the most commonly used drugs and aspirin, in particular, is considered the most commonly used drug in the world.\[42\] NSAIDs are mainly used for their antipyretic, anti-inflammatory and analgesic effects. A commonly used analgesic drug, acetaminophen, is not considered as a member of the NSAIDs; however, it has a very weak anti-inflammatory effect and has been recently suggested to inhibit platelet function.

The half-life (t½) of NSAIDs in plasma varies, but they generally fall into two groups, short with t½ between 1 and 5 h and long with t½ between 10 and 60 h. Although their effect on platelets was thought to last for as long as 1-week, recent evidence suggests that the effect of ibuprofen, a common NSAID, on platelet function, as assessed by the PFA-100, normalizes within 24 h after the cessation of the drug.\[43\]

**ASPIRIN (ACETYLSALICYLIC ACID)**

Since platelets are enucleated cells and aspirin irreversibly inhibit COX, the effect of aspirin on platelets lasts for their entire lifespan. Aspirin inhibits COX activity thereby blocking the synthesis of TXA₂ in platelets. Although TXA₂ is an important platelet-feedback agonist, other pathways can bypass it and induce full platelet activation and aggregation. Therefore, aspirin is considered a weak antiplatelet drug.

To completely abrogate the production of TXA₂, a single dose of 100 mg is sufficient in normal individuals. As a function of platelet turnover, COX activity recovers by about 10% per day after a single dose.\[44\] After aspirin ingestion is stopped, normal hemostasis may be restored even before all the platelet population is renewed. It has been suggested that as low as 5 - 10% of platelets with normal COX can suffice for the aspirin effect and restores normal hemostasis. Platelet donors are deferred if they have ingested aspirin within the last 48 h as the AABB requires, or 5 days as the UK guidelines require. Other blood components can be taken from a donor who has ingested aspirin within these limits.

After oral administration, aspirin blocks COX activity within 1 h and results in measurable platelet inhibition.\[42\] The plasma t½ of aspirin is 20 min and it is almost completely hydrolyzed to salicylate, which
also has an anti-inflammatory action. Salicylate is inactivated by conjugation with glycine.

This reaction $t\frac{1}{2}$ is 4 h. However, at high therapeutic doses, this process is saturated leaving salicylate without inactivation. The side-effects of aspirin mainly result from its effect on the normal function of protective prostaglandins. This might lead to serious complications such as gastric ulcers, the risk of bleeding and renal failure. Some individuals, who usually suffer from preexisting urticaria or asthma, may be aspirin-sensitive or intolerant. Therefore, concerns over the presence of American Society of Anesthesiologists (ASA) in blood units should not be dismissed. Sharon et al. have reported a case who was transfused a blood component and developed urticaria which was found, after further investigation, to be due to the presence of 20 mg/L aspirin in the blood. The recipient was also found to be allergic to aspirin indicating that the donor might have taken aspirin very shortly before the donation.

**ACETAMINOPHEN (PARACETAMOL)**

Acetaminophen ($t\frac{1}{2}$ 2 h), which is a very weak anti-inflammatory drug, was thought to have no antiplatelet effect; however, a number of recent reports have shown that it has a weak COX inhibitory effect. This effect appears to be dose-dependent in-vitro as assessed by aggregation and TXB2 production; however, the PFA-100 CTs were prolonged at high concentrations only. Paracetamol also appears to synergize with a traditional NSAID, diclofenac, by inhibiting platelets. Of note, currently, platelet donors are not deferred for acetaminophen ingestion. However, the accumulating evidence that suggests it can impair platelet function indicates that this issue should be re-evaluated. The incidence of paracetamol ingestion among blood donors has been reported to be between 2.5% and 6.12%. [45,51]

**DRUGS OTHER THAN NONSTEROIDAL ANTI-INFLAMMATORY DRUGS**

Although there is a wide range of drugs that have been shown to affect platelet function in-vitro, the clinical relevance of this inhibition is still not clear. These drugs include antibiotics (penicillin), cardiovascular drugs, thrombolytic agents and chemotherapeutic agents. In the case of blood donation, donors must be healthy, and those taking drugs for chronic illnesses are unlikely to donate blood. However, the presence of certain drugs in some donors’ blood has been reported. Penicillin, which has been found to inhibit platelet aggregation and prolong the BT has been detected in the sera of blood donors.

The incidence of defective platelet function among platelet donors: A few studies that evaluated the incidence of defective platelets among platelet donors have focused mainly on the occult intake of aspirin. This is not surprising as aspirin, unlike many other factors that alter platelet function, has been shown to be associated with clinical bleeding, particularly postoperatively in some types of surgical procedures. Moreover, patients ingesting aspirin 2 days or less before an operation have increased allogenic red blood cell transfusion requirements preoperatively. Therefore, undisclosed intake of aspirin is among the most important causes of acquired platelet defects among platelet donors. Therefore, in here, the focus will be mainly on aspirin ingestion among platelet donors.

In the 1970s, there were some concerns over the incidence of donors donating potentially defective platelets due to ingestion of aspirin. Mielke and Britten described their findings as a potential “nightmare for blood bankers” when about half of the donors in their study were found to have ingested aspirin within the last week. Aspirin is an over-the-counter drug that is commonly used, and many donors may not consider it as a drug. Therefore, some donors may not recall aspirin ingestion [Table 1].

Utilizing Trinder’s method, which detects salicylate (a major metabolite of ASA), McCann et al. found that 11.2% of donors had ingested salicylate. In another study and on a larger sample, Sharon et al. (1982) found a lower percentage of 6%. However, aggregation studies showed a higher percentage of donors (range 14 - 47%) with abnormal platelet aggregation. [57]

<table>
<thead>
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<th>Table 1: List of studies that have tested the effect of donor related variables on Platelet Function</th>
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<tr>
<td>Apheresis or Whole blood donors</td>
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<tr>
<td>McCann et al. (1970)</td>
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<td>Sharon et al. 1980</td>
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<td>Schwartz (1971)</td>
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<td>Bock et al. (1999)</td>
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<td>Jilma-Stohlawetz et al. 2001</td>
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<td>Harrison et al. 2004</td>
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<td>Paglieroni et al. 2004</td>
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higher percentage found with aggregation studies, maybe due to the fact that Trinder’s method can detect only recent ingestion of aspirin since salicylate is cleared rapidly from the circulation.

More recently, the interest in investigating the incidence of donors with defective platelets has revived. This was mainly driven by advances in platelet function testing, particularly the development of PFA-100®. In a relatively small study, Paglieroni et al. found that 38% of all blood donors had prolonged CEPI-CT and normal CADP-CT with 17% >300s, indicative of an aspirin-like defect. This was also confirmed by reduced responsiveness to stimulation by epinephrine as assessed by low expression of CD62P and PAC-1 in donors with prolonged CEPI CT.[26]

In apheresis-remunerated donors, Jilma-Stohlalawetz et al. found that 20% of donors had prolonged CEPI-CT with 11% >300s. Harrison et al. reported a lower percentage (16% with prolonged CEPI CT with 4% >300 s) of volunteer donors and the prolongation was largely transient upon re-testing. The difference in the reported percentages between those two studies may be attributed to the use of paid donors in the former study. Moreover, the anticoagulant concentration in the first study was higher, which is known to be associated with longer CTs.[6]

In these studies, aspirin is not necessarily the only reason for this CEPI CT prolongation as other factors, mainly dietary, can also give similar patterns.[58] For example, it has been shown that an intake of 19 g cocoa prolonged CEPI CT’s by 44% and CADP by only 13%[35] which indicates that cocoa might also show an aspirin-like effect. Moreover, Jilma-Stohlalawetz et al. found a substantial number (10/23) of donors with non-CT CEPI had levels of TXB2 not indicative of ASA consumption.[17]

CONCLUSIONS

Although when the prolonged CEPI CT results are coupled with a decrease in TXB2 are strongly suggestive of aspirin intake, it is not conclusive. This is because there are many dietary factors that also inhibit platelet function and lead to decreased TXB2 levels as discussed in the previous section. Therefore, for the detection of undisclosed intake of aspirin among blood donors, more specific tests should also be undertaken. A combination of more than one test such as, PFA-100®, aggregation, and TXB2 measurement would be more specific in detecting aspirin ingestion.

Nevertheless, these studies have shown that a significant number of donors may potentially donate defective platelets. Moreover, as prolongation of CEPI-CT in the PFA-100 test, in particular, has been found to predict bleeding during surgery,[30] it is reasonable to assume that deferring those donors from donating defective platelets should, therefore, potentially improve the efficacy of transfusion. However, this has to be proven by further studies on the effect of aspirin ingestion on the classical platelet storage lesion as well as by in-vivo studies.

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Interval between first palliative care consultation and death among patients in a comprehensive cancer center in Saudi Arabia

Sami Ayed Alshammary¹,², Abdullah Alsuhail¹, Balaji. P. Duraisamy¹, Saad Hamad Alabdullateef⁴, Savithiri Ratnapalan³

¹Department of Palliative Care, King Fahad Medical City, ²Department of Palliative Care, Centre for Postgraduate Studies in Family Medicine, Riyadh, Saudi Arabia, ³Department of Paediatrics, Dalla Lana School of Public Health, Toronto, Ontario, Canada

ABSTRACT

Introduction: Palliative care is a multidisciplinary approach that aims to improve the quality of life of patients with life-threatening illnesses. It has been recognized as a crucial part of patient care in oncology. Palliative care service was established in the comprehensive cancer center of King Fahad Medical City (KFMC), Riyadh, Saudi Arabia in March 2010. The objective of this study was to determine the interval between the first palliative care consult (PCC1) and death, and explore the possible cause of suggestive short timeframe between PCC1 and death.

Patients and Methods: This study included 210 cancer patients who had their PCC1 in KFMC within the period of March 2012 and March 2014. Demographic information, cancer diagnosis, date of cancer diagnosis, reason for referral, all symptoms reported in Palliative Care Unit, and date of death were gathered from the patients' charts. The interval between the PCC1 and death were computed and analyzed.

Results: Of the 210 patients, 121 (57.6%) were female, 127 (60.5%) were <60 years old, and 190 (90.5%) had non-haematological tumours. The main reasons for referral were symptom control (62.4%), symptom control and end of life (EOL) care (12.4%), symptom control and transfer of care (11.4%), and EOL care (8.6%). The median interval between PCC1 and death, diagnosis to PCC1, and diagnosis to death intervals were 19, 212, and 360 days, respectively. Patients diagnosed with haematological tumours were referred relatively earlier to palliative care. The difference in the mean (haematology > non-haematology) for the interval between PCC1 and death was 146.2 days (P < 0.001).

Conclusions: Late referrals to palliative care services KFMC is the strongest predictor of the short interval between PCC1 to death of advanced stage cancer patients. Identifying the potential cause of the late referrals can lead to developing optimal policies for the timely referral of cancer patients to palliative care upon diagnosis regardless of the stage of their disease. Education and advocacy are needed among the referring oncologists in the cancer center for earlier access to palliative care. Future studies are needed to establish the appropriate timing of the PCC1.

Keywords: Cancer, consultations, death, diagnosis, multidisciplinary, palliative care, timeframe

INTRODUCTION

The World Health Organization (WHO) defines palliative care as “an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual aspects of patient care.”¹ For palliative care to be delivered in such a holistic manner, patients have to be referred as early as needed to palliative care. The American Society of Clinical Oncology and recent randomized controlled trials advocate palliative care services.
care referral at the time of diagnosis of cancer and for other patient with the high symptom burden.\textsuperscript{2,3} Recent guidelines encourage referral to palliative care at the time of diagnosis of cancer as a standard of care.

The review of the literature on this topic revealed that the median time interval between palliative care referral and death was 1.9 months for 240 consecutive patients at M.D. Anderson Cancer Center.\textsuperscript{4} Other studies also suggest that primary physicians who are familiar with palliative care make earlier palliative care referrals as compared to those with limited or no palliative care experience.\textsuperscript{5,6} It has been demonstrated that palliative care consultation (PCC) at the time of diagnosis can improve the quality of life, decrease depressive symptoms, and prolong life in patients with metastatic cancer.\textsuperscript{7} Another study examined factors that influence early referral and found that younger patients, i.e., with head and neck cancer, and patients with shorter disease duration were more likely to be referred early to palliative care.\textsuperscript{8}

Palliative Care Unit (PCU) was established in the Comprehensive Cancer Center, King Fahad Medical City (KFMC) on March 2010. This unit consists of nine inpatient beds, outpatient and home care services and is staffed by PCC5, three assistant consultants, two trainee physicians (fellows) and one specialist nurse coordinator. Bedside nurses are assigned for patients according to acuity. The time from referral to the consultation is within 1 day. Patients with advanced stage cancers are referred to PCU for advice, transfer of care and further management. However, the referrals seemed to occur relatively late in the disease trajectory, mainly for the management of severe physical and psychological distress. The objective of this study was to explore the pattern of referral to KFMC-PCU and the timeframe from first PCU referral (PCC1) to death (interval: PCC\textsuperscript{i}) of patients with advanced cancer diagnoses.

**STATISTICAL ANALYSIS PROCEDURE**

Descriptive statistics was used to quantify patients’ demographics, disease features, and different intervals. Intervals between cancer diagnosis to death, cancer diagnosis to PCC1, PCC1-D were computed. Categorical variables like gender, age group and nationality along with others were presented as numbers and percentages. Medians and 95 confidence intervals (CI) were calculated for continuous variables-interval PCC1 (PCC1-D), the interval between diagnosis to death and interval of diagnosis to PCC1. Chi-square/Fisher’s exact test was used according to whether the cell expected frequency is smaller than 5 and it was used to determine the significant relationship among categorical variables. Independent sample t-test was used as per the condition of categories of the variable to determine the significant differences of all intervals. \( P <0.05 \) was considered as statistically significant. All patient data were entered and analyzed using statistical package SPSS Version 22.

**RESULTS**

There were 210 patients who were referred to palliative care and died during the study period. Of the 210 patients, 121 (57.6\%) were female, 127 (60.5\%) were <60 years old, 190 (90.5\%) had non-haematological tumours, and 199 (94.8\%) were Saudi patients. The distributions of other demographic variables are represented in Table 1.

The main reasons for referral [Table 2] were symptom control (62.4\%), symptom control and end of life (EOL) care (12.4\%), symptom control and transfer of care (11.4\%), and EOL care (8.6\%). As expected, most of the patients had non-haematological cancers (90.5\%) and were metastatic (84.3\%) at the time of diagnosis. At the time of PCC, the percentage of metastatic disease went up to 91.4\% from 84\%. Moreover, 94\% of patients were under the Do Not Resuscitate (DNR) order at the time of referral.

Table 3 shows that the median first consult (PCC1 to Death interval (PCC1), Diagnosis to PCC1 interval, and Diagnosis
Table 1: Demographic details (n=210)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Categories</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>89 (42.4)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>121 (57.6)</td>
</tr>
<tr>
<td>Nationality</td>
<td>Saudi</td>
<td>199 (94.8)</td>
</tr>
<tr>
<td></td>
<td>Non-Saudi</td>
<td>11 (5.2)</td>
</tr>
<tr>
<td>Age group</td>
<td>&lt;20</td>
<td>14 (6.7)</td>
</tr>
<tr>
<td></td>
<td>21-40</td>
<td>32 (15.2)</td>
</tr>
<tr>
<td></td>
<td>41-60</td>
<td>81 (38.6)</td>
</tr>
<tr>
<td></td>
<td>61-80</td>
<td>60 (28.6)</td>
</tr>
<tr>
<td></td>
<td>&gt;80</td>
<td>23 (11)</td>
</tr>
</tbody>
</table>

Table 2: Reason for referral, diagnosis and stages of patients (n=210)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Categories</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason for referral</td>
<td>Symptoms control</td>
<td>134 (63.8)</td>
</tr>
<tr>
<td></td>
<td>Symptoms control and end of life</td>
<td>26 (12.4)</td>
</tr>
<tr>
<td></td>
<td>Symptoms control and transfer of care</td>
<td>24 (11.4)</td>
</tr>
<tr>
<td></td>
<td>End of life</td>
<td>18 (8.6)</td>
</tr>
<tr>
<td></td>
<td>Transfer of care and end of life</td>
<td>5 (2.4)</td>
</tr>
<tr>
<td></td>
<td>Transfer of care</td>
<td>3 (1.4)</td>
</tr>
<tr>
<td>Diagnosis malignancy</td>
<td>Haematological malignancy</td>
<td>20 (9.5)</td>
</tr>
<tr>
<td></td>
<td>Non-haematological malignancy</td>
<td>190 (90.5)</td>
</tr>
<tr>
<td>Stages at diagnosis</td>
<td>Metastatic</td>
<td>177 (84.3)</td>
</tr>
<tr>
<td></td>
<td>Nonmetastatic</td>
<td>33 (15.7)</td>
</tr>
<tr>
<td>Stages at referral</td>
<td>Metastatic</td>
<td>192 (91.4)</td>
</tr>
<tr>
<td></td>
<td>Nonmetastatic</td>
<td>18 (8.6)</td>
</tr>
<tr>
<td>Code status</td>
<td>DNR</td>
<td>197 (93.8)</td>
</tr>
<tr>
<td></td>
<td>Full code</td>
<td>13 (6.2)</td>
</tr>
</tbody>
</table>

Table 3: Interval between initial palliative care consultation to death, interval between cancer diagnoses to death, and interval between diagnosis to PCC1 (n=210)

<table>
<thead>
<tr>
<th>Interval</th>
<th>Median</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCC1 to death (days) (PCCI)</td>
<td>19</td>
<td>7-31</td>
</tr>
<tr>
<td>Diagnosis to death (days)</td>
<td>360</td>
<td>329-391</td>
</tr>
<tr>
<td>Diagnosis to PCC1 (days)</td>
<td>212</td>
<td>183-241</td>
</tr>
</tbody>
</table>

DISCUSSION

Our results show that the timing of palliative care referrals is suboptimal in our institution. Although early referral to palliative care for cancer patients is generally recommended, the timing of it has not been easy. Most of the studies show that even though patients with haematological malignancies tend to be referred later compared to those with non-haematological malignancies, patients with haematological malignancies live longer than those with solid tumours which could be associated with the fact that patients with hematologic malignancies have lower frequency of major pain syndromes, cachexia, and other sentinel symptoms and these patients have other viable treatment options despite their advanced disease. Our study found that symptomatic control was the most common reason for referral but fails to demonstrate the differences between haematological and non-haematological malignancies.

In this study, we found that the median interval between first palliative consult (PCC1) and death was 19 days. This interval (PCCI) was 210.7 ± 31.6 days for haematological malignancies compared to 64.5 ± 14.8 days for non-haematological malignancies. Though not statistically significant, we observed that the median interval diagnosis to PCC1 in patients with haematological malignancies was less than in patients with solid (non-haematological) tumours, suggesting that hematologists refer their patients earlier compared to oncologists. Patients with haematological and non-haematological malignancies both had a similar diagnosis to death intervals (survival), further validating the earlier referrals from hematologists.

We observed that most of the referred patients were younger than 60 years of age. This observation can be accounted to several factors, like shorter survival period in palliative care for older patients, more aggressive disease trajectory, and earlier referral of younger patients due to increased physical or psychosocial distress.

The sociocultural context of the population makes this study unique. Saudi Arabia has gone through immense developments in the field of medicine and healthcare in the past few decades. However, palliative care is a relatively nascent specialty and is not yet widely acknowledged by the patients and medical fraternity alike.

A huge percentage of Saudis live in the rural areas of the Kingdom, and hence, their lack of awareness and access to proper disease management leads to late and advanced presentations of malignancies. This can be the reason why our study shows no significant difference between haematological and non-haematological cancer patients. Advanced malignancies and poorer compliance could mean worse outcomes for patients with or without a palliative care referral.
Table 4: Association between intervals and type of malignancy (n=210)

<table>
<thead>
<tr>
<th>Interval</th>
<th>Type of malignancy</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haematological</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malignancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-haematological</td>
<td></td>
</tr>
<tr>
<td>PCC1 to death (days)</td>
<td>210.7 ± 31.6</td>
<td>64.5 ± 14.8</td>
</tr>
<tr>
<td>Diagnosis to death (days)</td>
<td>491.9 ± 43.4</td>
<td>410.7 ± 44.8</td>
</tr>
<tr>
<td>Diagnosis to PCC1 (days)</td>
<td>261.2 ± 35.6</td>
<td>346.2 ± 42.4</td>
</tr>
</tbody>
</table>

PCC1: First palliative care consult. *P≤0.05

Table 5: Association between intervals and stage at diagnosis (n=210)

<table>
<thead>
<tr>
<th>Interval</th>
<th>Stage at diagnosis</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metastatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-metastatic</td>
<td></td>
</tr>
<tr>
<td>PCC1 to death (days)</td>
<td>83.5 ± 18.5</td>
<td>426.2 ± 46.1</td>
</tr>
<tr>
<td>Diagnosis to death (days)</td>
<td>426.2 ± 46.1</td>
<td>376.8 ± 31.8</td>
</tr>
<tr>
<td>Diagnosis to PCC1 (days)</td>
<td>342.7 ± 43.8</td>
<td>325.6 ± 31.8</td>
</tr>
</tbody>
</table>

PCC1: First palliative care consult

Table 6: Association between intervals and stage at referral (n=210)

<table>
<thead>
<tr>
<th>Interval</th>
<th>Stage at referral</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metastatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-metastatic</td>
<td></td>
</tr>
<tr>
<td>Diagnosis to palliative care consult (days)</td>
<td>342.7 ± 43.8</td>
<td>325.6 ± 31.8</td>
</tr>
<tr>
<td>First palliative care consult to death (days)</td>
<td>79 ± 18.5</td>
<td>426.2 ± 46.1</td>
</tr>
<tr>
<td>Diagnosis to death (days)</td>
<td>426.2 ± 46.1</td>
<td>376.8 ± 31.8</td>
</tr>
</tbody>
</table>

Oncologist bias in recommending palliative care

Most often, palliative care and hospice care are mistakenly thought to be synonymous. Some oncologists think that palliative care is only necessary for EOL care. EOL care as the sole reason for palliative care referral could be considered as a key barrier to the implementation of an integrated palliative care–oncology pathway. Oncologists should realize that introduction of palliative care services postdiagnosis to patients with advanced cancer has an important role in alleviating patients’ symptoms, reduce patient and his/her family members’ distress, improve the quality of life, and possibly prolong survival [especially in the case of those with metastatic nonsmall cell lung cancer].

Researchers found that early referrals to palliative care 3–6 months before death resulted in fewer emergency room visits and hospital admissions, satisfaction with care, improved survival at reduced cost and hospital deaths compared with late referrals. With proper palliative care referral training, medical oncologists in Saudi Arabia have the potential to follow and improve this trend. Development of practice guidelines for specialized palliative care services has proven to be successful in identifying seriously ill patients who are at high risk for early death and who should be priorities for earlier palliative care. Application of such practice guidelines along with repeated education sessions may reduce oncologists’ resistance to early palliative care referral.

Palliative care as a recognized specialty

Palliative care must be acknowledged as one of the standards of care for cancer patients. The perception of palliative care as playing only a supportive role at the EOL must be changed. Fully integrating palliative care programs into mainstream cancer care would solve the misconception that palliative care is “anticurative.” Palliative care is now considered as part of the dynamic treatment options available to cancer patients. It is the modality of choice to relieve physical and emotional symptoms and improve the quality of life and not just a last resort if the cancer is no longer controllable.

In many developing countries, and in Saudi Arabia, hospice care is not yet well developed and, in fact, is a non-existent idea in many regions. Confusion still persists with the terms “hospice care” and “palliative care” being used interchangeably. Many acute in-patient PCUs are used as hospice and EOL care units. Though this is not wrong, the development of hospice care facilities will clear the confusion in the oncologists’ mind and promote earlier in-patient palliative care referrals in cancer centers.

Oncologists may assume that it is their obligation to manage the symptoms of cancer patients, and thus referring their patients to PCU may be considered is
an evasion of their responsibilities. On the contrary, studies have shown that in this case it is not because the oncologists have poor intention, but rather they are just unable to perform all their tasks.\textsuperscript{[16]}

**Role of media in promoting awareness**

Recently, WHO recognized that access to palliative care as a human right. However, the mainstream media still does not find palliative care attractive enough compared to the news about new anti-cancer drugs discoveries. The focus remains on curative content, rather than on palliative care which focuses on improving the quality of life and relieving pain and suffering in cancer patients. It is noteworthy that most of the curative treatment options (including the latest) add more suffering to the patient by increasing side-effects, which can be effectively relieved by palliative care. The media has an important role in changing the public perception about palliative care concept – that it improves the quality of life, patient satisfaction and sometimes survival, and is not anticurative. This will perhaps encourage patients and family to demand palliative care services from the health care provider.

**Need to expand palliative care services**

Palliative care needs to be provided in tertiary hospitals, community hospitals, hospices or homes as there is a huge demand for this service. This requires the development of manpower trained in palliative care— including general practitioners, community and specialist nurses, health educators, physical and occupational therapists, social workers and many other specialists. The newly modified curriculum for medical students at undergraduate and postgraduate levels must emphasize the need for care focusing on quality and not merely the extension of life [Text Box 1].

**Text Box 1: Suggestions for improving palliative care**

<table>
<thead>
<tr>
<th>Health care providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education for all healthcare providers (physicians, nurses and other health care workers) about the availability of palliative care and what it offers</td>
</tr>
<tr>
<td>Formulating guidelines for palliative care referrals</td>
</tr>
<tr>
<td>Easily accessible online referral forms for Family Physicians and Oncologists to refer a patient</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient education of palliative care as one of the management options and not as an option if everything fails. Made available shortly after the diagnosis</td>
</tr>
<tr>
<td>Palliative care information in the media to dispel any myths</td>
</tr>
<tr>
<td>Patient/caregiver partnerships to promote collaborations with the oncology team</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative care team to be included in the care team with hospital and community services</td>
</tr>
<tr>
<td>Palliative care curriculum to be taught to medical, nursing and allied health professional students</td>
</tr>
<tr>
<td>Palliative care interdisciplinary rounds to promote awareness</td>
</tr>
<tr>
<td>Increasing funding for palliative care services</td>
</tr>
</tbody>
</table>

**CONCLUSION**

The PCC1 to death interval indicates late referral to palliative care services at our center. Education is needed among our referring cancer center physicians for earlier access to palliative care. The media, healthcare regulators, palliative care physicians and the community at large share the responsibility for improving community health by improving palliative care services. Prospective studies are needed to establish the appropriate timing of the PCC1.

**REFERENCES**


Source of Support: Nil. Conflict of Interest: None declared.
Primary healthcare physicians’ attitude and perceived barriers regarding minor surgeries

Ali Wahab A. Alfaraj, Abdulaziz Mohammad Sebiany¹, Waleed Alharbi²

Qatif Primary Healthcare Centers, Public Health, Ministry of Health, Eastern Province, ¹Department of Family and Community Medicine, College of Medicine, University of Dammam, Dammam, ²Family Medicine Postgraduate Program, Public Health, Ministry of Health, Eastern Province, Saudi Arabia

ABSTRACT

Objectives: To determine the importance of minor surgical procedures that could be done by physicians or general practitioners at Primary Healthcare Centers (PHCC) and to determine the important and major obstacles for physicians’ inability to perform minor surgeries (MS) at PHCC.

Methodology: Data was collected through a self-administered questionnaire distributed to all primary healthcare physicians in 26 PHCC in Al-Qatif by the official mail of Al-Qatif PHCC Administration. Data was also collected by filling a checklist by the researcher. The data was analyzed using Statistical Package for Social Science.

Results: A total of 61, out of 70 physicians working in Al-Qatif PHCC, completed the self-administered questionnaire which yielded an overall response rate of 87%. 42 (68.6%) participants found themselves as competent to practice MS, and 19 (31.2%) found themselves as not competent to practice MS at PHCC. The highest mean for the degree of importance and confidence, when comparing both, was the insertion of sutures with a statistically significant P value (0.000). Coded surgical referral in all Al-Qatif PHCC over 1-year was 6,187 (25.4%) out of 24,369.

Conclusion: Most of the physicians in Al-Qatif PHCC are interested and feel competent in performing MS and they encourage establishing MS program in the PHCC. However, majority of the physicians in Al-Qatif PHCC are not confident in practicing most of the procedures listed in the survey, although they believe that these procedures are important in their practice.

Keywords: Ambulatory surgeries, day surgeries, minor surgeries, primary healthcare, primary minor surgeries

INTRODUCTION

Minor surgeries (MS) can be defined as short procedures which can be done under local anaesthesia, are minimally invasive and require the common characteristics in surgical techniques.[¹]

Surgical illnesses which require MS intervention are very commonly encountered in family practice setting. In many situations this intervention could cure the problem and put an end to patients’ suffering by evading long waiting list in the referral hospitals. This would also strengthen doctor-patient relationship and give the physician more professional self-satisfaction.

In Saudi Arabia, provisions for appropriate treatment of common injuries and MS at Primary Healthcare Centers (PHCC) is the seventh element of Primary Health Care (PHC),[²] and is considered an essential health service in primary healthcare reform project.[³] Therefore, MS is an integral part of general practice.[⁴][⁵]

Despite the fact that it has obvious benefits and is also well-recognized by health policy makers, since the establishment of PHC in the Kingdom of Saudi Arabia (KSA), evidence has revealed that MS procedures offered at PHCC in KSA are still in its infancy.[¹]

Minor surgeries are highly recognized within primary care setting in different parts of the world. In UK, general practitioners (GP) performing MS has been welcomed by patients as they can receive treatment for their minor lesions promptly, in familiar surroundings, by a doctor they know well, with follow-up by nurses whom they already know.[⁶] The similar advantages
have been reported worldwide including USA and Canada.\cite{1,7-10}

Research conducted in PHC has shown MS benefits that include its safety, cost-effectiveness, decreases in referral rate, and also improved patient satisfaction.\cite{4,11} MS also satisfies physicians because it provides an opportunity to treat their patient, not only through medicine, but also by their expertise.\cite{12}

Although it is time-consuming in PHC, it is more cost-effective than the same intervention performed in a hospital setting. The cost of MS in a general practice setting is 15 times less than the same procedure performed in a hospital setting, which offers great saving,\cite{13-14} consequently decreasing the financial burden on the health system; moreover, this gives a high doctor and patient satisfaction.

To the best of our knowledge, there is very limited published evidence on reasons exploring the improper utilization of PHC resources to optimize MS procedures in KSA. Therefore, our aim was to investigate physicians’ perception, attitude, readiness, and barrier for not performing MS procedures in PHC settings.

The study was conducted in Al-Qatif area, located in northeastern KSA, over the Al-Qatif petroleum field with a population of >500,000 people. The estimated number of PHCC in Al-Qatif is 26 PHCC and 3 referring hospitals, one of which is a secondary referring hospital.

**METHODOLOGY**

This is a cross-sectional study. The preparation for the study was started in October 2006 and the fieldwork, including the distribution and collection of the questionnaire, was conducted from April to May 2007 in Al-Qatif area, Saudi Arabia.

As there was no available validated questionnaire, and to our knowledge, this is the first study of its kind in KSA, a specially designed self-administered questionnaire with a 5-points Likert scale was used.

Questionnaire’s contents were formulated by extensive literature review, in addition to, reviewing the General Practice settings of both international and local experiences as well as experts’ consultation working in both surgical and family practice settings.

Moreover, a pilot study was conducted on 7 residents in the 4th year of Saudi Board of Family Medicine residency who commented on the following measures: ease of use, clarity, competence, and relevance. The comments were incorporated into the final questionnaire.

Potential study procedures were chosen based on resources mentioned previously. A list of many procedures was obtained, from which we selected the most relevant, feasible to perform and important procedures to Saudi PHC setting.

After considering the ethical aspects and applicability (current and future), we formulated the questionnaire.

The questionnaire included: Demographic data and physician’s highest qualification, physician’s and level of satisfaction and interest in performing MS procedures at PHCC or referring patients to a hospital, the most important reasons for not performing MS procedures at PHCC, physician’s feedback on the most important reasons preventing the practice of MS in PHCC setting as well as the important procedures commonly encountered in PHC, moreover the PHCC physician’s degree of competence in performing these procedures.

All the Saudi and non-Saudis physicians working in the 26 Al-Qatif PHCCs, both males and females were included in this study.

The questionnaire was distributed after attaining permission from PHC Administration located in the eastern province of Saudi Arabia. Accordingly an official circular was issued by Al-Qatif Primary Healthcare Administration to all PHCC physicians requesting their cooperation in completing the questionnaire.

Opaque envelops were mailed to each centre through the official mail of Al-Qatif Primary Healthcare Administration, containing the exact number of questionnaires corresponding to the number of physicians working at each centre.

After answering the questionnaires, they were returned to the researchers by the same mail. Follow-up letters and calls to non-responding doctors were made several times. Distribution and collection of questionnaires were also done by the researchers. In some instances, assistance from staff in the PHCC or/and Administration of PHCC staff were utilized.

All the data were checked during the study for accuracy, completeness and were accordingly coded. Data was entered into a personal computer and the Statistical Package for Social Science (SPSS) version 13.0 (IBM, Armonk, New York)(2005) was used for appropriate statistical analysis.
All Saudis and non-Saudis physicians working in the clinical field in Al-Qatif PHCC, males and female, were included. Exceptions included physicians on leave, physicians in exclusively administrative practice, refusal and if the physician’s work experience was <6 months.

**RESULTS**

The questionnaire was distributed to 70 physicians working at different PHCC in Al-Qatif region, 61 (87.2%) subjects consented to participate and sent the completed drafts that were used for interpretation. Among those who did not participate [9 (12.8%) physicians], many of them were on annual leave and only one form was returned incomplete.

Table 1 shows that there was almost equal distribution of males and females with 49.2% and 50.8%, respectively, most of them being Saudi nationals 42 (68.9%). Their work experience ranged from <1 year to >20 years with a mean of 2.6 years. Most of the physicians (83.6%) had their bachelors in medicine; few had postgraduate qualifications such as diploma and masters.

Table 2 represents the physicians’ perception, attitude, and readiness towards MS. Majority of them [53 (86.9%)] were interested to practice MS at the PHCC and many of them [42 (68.6%)] reported themselves as competent enough to perform the procedures in PHCC setting. When asked about referral, 70.5% of the physicians were not satisfied in referring their patients to the hospital. Moreover, they reported that their patients were also not satisfied when referred to the hospital in order to manage their minor surgical illness. Responding to the establishment of primary MS program at PHC, 70% of the participants were of the opinion that it should be properly established.

Table 3 summarizes the physician’s perceived barriers preventing them from performing MS procedures in PHC setting. Majority of them agreed that lack of facilities (90.2%) was on the top of the list, followed by shortage of staff (55.8%), fear of complications (73.7%), medico-legal considerations (72.2%), lack of time (70.4%), and ease of referral (57.3%). A significant number of physicians also agreed that they lack training (80%) and experience (65.4%).

Table 4 shows the comparisons between importance and level of PHCC physicians’ competence in performing the list of 46 MS procedures included in the questionnaire. The mean degree of importance of procedures according to Likert’s scale, varied between 2.08/5 for aspiration and injection of bursae to 4.54/5 for insertion of sutures. The mean degree of confidence of procedures varied between 1.50/5 for contraceptive diaphragm fitting and insertion to 4.00/5 for insertion of sutures. The highest mean for the degree of importance
and confidence was for the insertion of sutures and the $P$ value, comparing both, was statistically significant (0.000).

For all procedures, the comparison between procedure importance and confidence was significant with $P < 0.05$ except for skin biopsy, placement of transurethral catheter, ear piercing and aspiration and injection of bursae where $P > 0.05$.

Table 5 shows the workload at 26 Al-Qateef PHCC for 1-year (from Muharam to Du alhuga 1427 Hijri) and PHCC readiness to perform MS, we found during 1-year the total visits of 26 for PHCC was 535,811 out of them 65,241 (12.18%) were for surgical reasons. The total hospitals referrals in 1 year for all specialties were 24,369 about one-fourth of them 6187 (25.4%) were surgical referrals which forms the highest referrals rate among all other specialties referrals. Other specialties referrals rate came as the following: OB/GY 3884 (16.00%), dermatology 3278 (13.50%), internal medicine 3229 (13.30%), ophthalmology 3072 (12.60%), ENT 2811 (11.50%), pediatrics 868 (3.60%), and dental 484 (2.00%).

Regarding the readiness of PHCC, we found that at the time of survey, no centre had a MS room and only 4 PHCC out of 26 PHCC could arrange for a room which could be used as a sterile MS room. Basic surgical kits including all basic surgical instruments, parenteral anaesthesia, and oxygen supply were available in all 26 PHCC.

**DISCUSSION**

An overall response rate of 87% was very good, such a high response rate of mailed self-administered questionnaire indicates the cooperation of both physicians and Al-Qatif PHCC administration. Although there were some complaints about the questionnaire’s length and the presence of some unfamiliar MS procedures listed.

Experience, gender, degree of qualification, and nationality had great influence on perception and attitude of GP towards importance and confidence in performing MS, and in many circumstances, determined the behaviour of the physician in managing patients with MS illnesses.

Total patient visits to all PHCC during one Hijri in Al-Qatif PHCC workload was 535,811 [Table 4], out of which 65,241 (12.18%) were for surgical illnesses. In addition, there were certainly a significant number of patients presenting with MS illnesses, but due to official censuses, they were categorized or entitled under other specialties. However, they could still be managed under the scope and capacity of primary MS, such as: warts and navus excisions; under dermatology and excision of Chalazion under ophthalmology.

Therefore, certainly this percentage was underestimated although it is still an essential percentage. The total number of referrals for all the specialties in the 26 PHCC in Al-Qateef district for a period of 1-year was 24,369: Surgical referrals accounting for the highest referral rate with 6,187 (25.4%). If we considered the point discussed previously, the rate of surgical referrals would be much higher than estimated. Obviously, this rate of surgical referrals can form a huge load on the referral hospitals, not to mention the significant number of patients that may suffer from many difficulties as a result of such referrals for MS which could be handled in PHCC setting.

Physicians’ attitude and perception towards MS was exhibited as follows: Two-thirds 43 (70.5%) of physicians were not satisfied with referring their...
patients to hospitals. Most, 28 (45.9%) of the physicians, stated that performing MS at PHCC was not difficult, most of them, 53 (86.9%), are interested to perform MS, 53 (86.9%) encourage the establishing of MS program in their working PHCC and only 17 (27.8%) of the physicians were satisfied while 43 (70.50%) were not satisfied for referring their patient with MS illnesses to hospitals; this could explain the reasons why the majority of the physicians in PHCC were not satisfied with the management of MS patients by referring them to a hospital setting. This dissatisfaction of the majority of the physicians may also be explained by

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Degree of importance</th>
<th>Degree of confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Abscess incision and drainage</td>
<td>4.26</td>
<td>1.139</td>
</tr>
<tr>
<td>Wound debridement</td>
<td>4.22</td>
<td>1.146</td>
</tr>
<tr>
<td>Insertion of sutures</td>
<td>4.54</td>
<td>1.089</td>
</tr>
<tr>
<td>Laceration repair</td>
<td>3.83</td>
<td>1.22</td>
</tr>
<tr>
<td>Skin biopsy</td>
<td>2.12</td>
<td>1.201</td>
</tr>
<tr>
<td>Excision of dermal lesions, e.g., papilloma, warts, nevus or cyst</td>
<td>2.98</td>
<td>1.408</td>
</tr>
<tr>
<td>Cryotherapy of skin lesions</td>
<td>3.12</td>
<td>1.427</td>
</tr>
<tr>
<td>Electrocautery of skin lesions</td>
<td>2.90</td>
<td>1.349</td>
</tr>
<tr>
<td>Skin scraping for fungus determination</td>
<td>3.44</td>
<td>1.444</td>
</tr>
</tbody>
</table>

Table 4: Comparison between degree of importance and degree of confidence

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Degree of importance</th>
<th>Degree of confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Release subungual haematoma</td>
<td>3.34</td>
<td>1.263</td>
</tr>
<tr>
<td>Drainage acute paronychia</td>
<td>3.86</td>
<td>1.21</td>
</tr>
<tr>
<td>Excision for ingrown toenail</td>
<td>3.33</td>
<td>1.374</td>
</tr>
<tr>
<td>Removal of foreign body, e.g., fish hook, splinter, or glass</td>
<td>4.09</td>
<td>1.159</td>
</tr>
<tr>
<td>Infiltration of local anaesthetic</td>
<td>4.20</td>
<td>1.222</td>
</tr>
<tr>
<td>Digital block in finger or toe</td>
<td>3.30</td>
<td>1.394</td>
</tr>
<tr>
<td>Slit lamp examination</td>
<td>3.31</td>
<td>1.273</td>
</tr>
<tr>
<td>Removal of corneal or conjunctival foreign body</td>
<td>3.41</td>
<td>1.346</td>
</tr>
<tr>
<td>Application of the eye patch</td>
<td>4.24</td>
<td>0.951</td>
</tr>
<tr>
<td>Removal of cerumen</td>
<td>3.44</td>
<td>1.385</td>
</tr>
<tr>
<td>Removal of ear and nose foreign body</td>
<td>3.89</td>
<td>1.191</td>
</tr>
<tr>
<td>Cauter for anterior epistaxis</td>
<td>3.14</td>
<td>1.166</td>
</tr>
<tr>
<td>Anterior nasal packing</td>
<td>3.75</td>
<td>1.299</td>
</tr>
<tr>
<td>Nasogastric tube insertion</td>
<td>2.95</td>
<td>1.431</td>
</tr>
<tr>
<td>Anoscopy/proctoscopy</td>
<td>2.82</td>
<td>1.578</td>
</tr>
<tr>
<td>Incise and drain thrombosed external haemorrhoid</td>
<td>2.19</td>
<td>1.29</td>
</tr>
<tr>
<td>Placement of transurethral catheter</td>
<td>2.88</td>
<td>1.519</td>
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<tr>
<td>Aspirate breast cyst</td>
<td>2.51</td>
<td>1.299</td>
</tr>
<tr>
<td>Pap smear</td>
<td>3.14</td>
<td>1.42</td>
</tr>
<tr>
<td>Diaphragm fitting and insertion</td>
<td>2.22</td>
<td>1.41</td>
</tr>
<tr>
<td>Intrauterine contraceptive device insertion</td>
<td>2.62</td>
<td>1.541</td>
</tr>
<tr>
<td>Normal vaginal delivery</td>
<td>2.97</td>
<td>1.483</td>
</tr>
<tr>
<td>Episiotomy and repair</td>
<td>2.75</td>
<td>1.567</td>
</tr>
<tr>
<td>Reduce dislocation</td>
<td>3.22</td>
<td>1.403</td>
</tr>
<tr>
<td>Application of casts</td>
<td>2.95</td>
<td>1.395</td>
</tr>
<tr>
<td>Aspiration and injection joints, e.g., knee, shoulder</td>
<td>2.25</td>
<td>1.294</td>
</tr>
<tr>
<td>Aspiration and injection of bursae; e.g., patellar, sub-acromial</td>
<td>2.08</td>
<td>1.183</td>
</tr>
<tr>
<td>Oral airway insertion</td>
<td>3.85</td>
<td>1.363</td>
</tr>
<tr>
<td>Bag and mask ventilation</td>
<td>4.05</td>
<td>1.213</td>
</tr>
<tr>
<td>Endotracheal intubation</td>
<td>3.34</td>
<td>1.470</td>
</tr>
<tr>
<td>Cardiac defibrillation</td>
<td>3.63</td>
<td>1.484</td>
</tr>
<tr>
<td>Giving injections</td>
<td>4.24</td>
<td>1.189</td>
</tr>
<tr>
<td>Venipuncture</td>
<td>3.50</td>
<td>1.479</td>
</tr>
<tr>
<td>Obstetric ultrasound</td>
<td>3.81</td>
<td>1.206</td>
</tr>
<tr>
<td>Internal hemorrhoids banding</td>
<td>2.15</td>
<td>1.205</td>
</tr>
<tr>
<td>Neonatal circumcision</td>
<td>2.30</td>
<td>1.406</td>
</tr>
<tr>
<td>Ear piercing</td>
<td>2.81</td>
<td>1.408</td>
</tr>
</tbody>
</table>

*Based on t-Test. SD: Standard deviation
the following: They are able to identify the illnesses and are competent to perform the surgical procedure, they find that performing the procedure for their patients will increase their professional satisfaction and strengthen the doctor-patient relationship, but in spite of all that, they are forced to refer their patients to hospitals.

With these positive parameters, the physicians in Al-Qatif PHCC are in good attitude and readiness to start developing a safe and efficient MS program to deliver the service as well as apply the concept of patients comprehensive (biopsychosocial) care.

The survey showed that the leading difficulties preventing the practice of MS was the lack of facilities and unavailability of a sterile room, where 55 (90.20%) physicians considered this as number one difficulty. 49 (80.30%) of physicians stated that the second difficulties was due to lack of training that may be explained by the absence of a clear view for MS at the level of PHCC, absence of MS-PHC setting training program with 34 (55.70%) of the physicians having no previous surgical experience. 45 (73.70%) of physicians found that the fear of complications was the third difficulty encountered, which could be associated with lack of facilities and training. 46 (75.40%) found that lack of experience was the fourth difficulty which could be explained by 34 (55.70%) of physicians having no previous surgical experience, recently employed and most probably recently graduated physicians, absence of training programs, and probably lack of coordination between surgical departments in referral hospitals and Al-Qatif PHCC sector.

In total, 44 (72.20%) of the physician found that the fear of medico-legal considerations was the fifth difficulty. Insufficient time was considered as the sixth difficulty by 43 (70.40%) physicians, which may be a major concern, especially in very busy PHCC. 35 (57.30%) of physicians felt that easy referrals system or easily hospital accessibility as the seventh difficult. 34 (55.80%) of the physicians stated that the shortage of staff was the eighth difficulty 23 (37.70%) of physicians considered patients incorporation as the ninth difficulty. 23 (37.70%) of the physicians believe that patients with MS problems would not come to PHCC as the tenth difficulty. Finally, 13 (21.3%) of the physicians felt that difficulty in establishing the diagnosis is the eleventh.

**CONCLUSION AND RECOMMENDATIONS**

The Al-Qatif PHC sector is in an essential need to place an MS program supported by physicians’ interest, encouragement, and satisfaction. The program components should include physicians training, provide and maintain essential facilities to meet physicians’ satisfaction and interest. As a result, this most probably will deliver an important health service to a significant number of population in a form of a safe and efficient environment to achieve the concept and understanding of a comprehensive and biopsychosocial care.

This study may be placed as a beginning to establish the MS service in the Al-Qatif PHCC sector and other PHC sectors in Kingdom as well as to try and catch up to the same level of essential service delivered in the developed countries. Further studies are required on the outcome of many MS procedures performed in the current situation of mismatching between the importance and confidence.

**REFERENCES**


| Table 5: workload for last 1-year (Muharam till Du alhuja 1427) and PHCC readiness to perform minor surgeries |
|---------------------------------------------------------------|------------------|------------------|
| Workload, surgical load, and readiness                         | Number | Percentage |
| Total number of patient visit per year                         | 535,811 | -              |
| Total number of referrals per year                             | 24,369  | 12.18          |
| Surgical patients out of the total number of patients visiting PHCC | 65,241  | 12.20          |
| Surgical referrals out of all referrals per year               | 6187    | 25.40          |
| Obstetrics and gynecology referrals per year                   | 3884    | 16.00          |
| Dermatology referrals per year                                 | 3278    | 13.50          |
| Internal medicine referrals per year                           | 3229    | 13.30          |
| Ophthalmology referrals per year                               | 3072    | 12.60          |
| ENT referrals per year                                         | 2811    | 11.50          |
| Pediatric referrals per year                                   | 868     | 3.60           |
| Dental referrals per year                                      | 484     | 2.00           |
| Surgical and dermatological referrals per year                 | 9465    | 38.80          |
| Presence of minor surgeries room                               | 0       | 0.00           |
| If any room present, is it sterile?                           | 0       | 0.00           |
| Possibility to arrange for MS room                            | 4/26    | 15.40          |
| Availability of basic MS kit                                   | 26/26   | 100            |
| Availability of parenteral local anaesthesia                   | 26/26   | 100            |
| Availability of oxygen supply                                  | 26/26   | 100            |

PHCC: Primary Healthcare Center

How to cite this article: Alfaraj AA, Sebiany AM, Alharbi W. Primary healthcare physicians’ attitude and perceived barriers regarding minor surgeries. J Health Spec 2015;3:67-73.

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Letter to the Editor

Fear of losing face effecting the process of peer-to-peer feedback in the Arab world

Sir,

Widespread implementation and adaptation of problem-based learning (PBL) curricula during the last decade made earnest changes in the overall learning environment in the Arab world. However, it has also brought some apprehension that directly confronts the cultural values of the Arab world. Frambach et al., 2012[1] also endorsed it while examining three cultures related to Arab, Asian and Dutch societies. Nevertheless, in PBL environment, the responsibility for the learning process is fairly given to the student in order to enlarge the educational congruence; students should also receive accountability in the giving feedback.[2] One can argue that in the western world students are still a novice for giving feedback, and hence it is hard and difficult to employ it in the Arab world.

This issue is embedded with a problem of students’ readiness for PBL in the Arab culture, and it could be addressed from the angle of different indices studied by Hofstede, 2005.[3] This study depicts that the Arab culture with high power distance index values tends to lead a hierarchical order, therefore, diffident about trusting peer-feedback and rely on expert opinions more. In addition to that, the Arab world where social bonding is very resilient and society as a whole does not want to fade their expression among their peoples it is hard to expect peers to give unbiased feedback.

In the western world, students are skilled differently from the early age to rationalize using logic and individuality; thus tend to have a more positive perception regarding peer feedback. Hence, it is easy to overcome most of the errors giving and receiving feedback and could resolve the problem of lenient (Doves) and severe (Hawks) raters. Conversely, Arab students are taught to communicate in a way that uses emotions and generally place a high value on exhibiting emotion.[1] Therefore, they rarely admit errors so as to avoid the face value/respect in front of their colleagues and friends. As a counter argument, we need to analyze whether it is relevant to the training aspect or if it is a cultural problem.[1]

However, this gap between the East and West is getting closer as many students are getting there education in the western world so the increasing globalization, probably moderates perceptions and changes attitudes in the Arab world. Nevertheless, it is still a challenge to convince our students that their feedback to peers enhances learning without humiliation in front of their friends. Therefore, it is recommended that we first develop a culture of giving and receiving feedback instead of simply adapting a curriculum directly.

Abdul Sattar Khan
Department of Family and Community Medicine, College of Medicine, King Faisal University, Al-Hofuf, Al-Ahsa, Saudi Arabia

Address for correspondence:
Dr. Abdul Sattar Khan,
Department of Family and Community Medicine, College of Medicine, King Faisal University, Al-Hofuf, Al-Ahsa, Saudi Arabia.
E-mail: drsattarkhan@gmail.com

REFERENCES
ALVEOLAR BONE REMODELING AROUND IMMEDIATE IMPLANTS PLACED IN ACCORDANCE WITH THE EXTRACTION SOCKET CLASSIFICATION: THREE-DIMENSIONAL MICROCOMPUTED TOMOGRAPHY ANALYSIS.

M.S. Al-Shabeeb¹, M. Al-Askar, A. Al-Rasheed, N. Babay, F. Javed, H.L. Wang, K. Al-Hezaimi
Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: dr.munirah.ss@gmail.com

Background: Previous studies assessed bone remodeling after a single tooth extraction; however, the effect of multiple contiguous teeth extractions around immediate implant remains unknown. The aim of this microcomputed tomographic investigation is to analyze the alveolar bone remodeling around immediate implants placed in accordance with the extraction socket classification (ESC).

Methods: Under general anaesthesia, 10 beagle dogs underwent atraumatic tooth extractions. Animals were randomly divided into three groups, with 16 sites per group: 1) ESC-1, single tooth extraction; 2) ESC-2, two contiguous teeth extraction; and 3) ESC-3, more than two contiguous teeth extractions. Immediate implants were inserted in each socket, and postoperative plaque control measures were undertaken. After euthanasia, the jaw segments were evaluated for bone thickness, marginal bone loss (MBL), and bone-to-implant contact (BIC) using microcomputed tomography.

Results: The mean buccal bone thickness (P < 0.05) and MBL (P < 0.05) was compromised in jaws in ESC-3 compared to those in ESC-1 and ESC-2. The BIC was significantly higher among jaws in ESC-1 compared to those in ESC-2 and ESC-3 (P < 0.05). There was no significant difference in the buccal bone thickness, MBL, and BIC among the groups in the maxilla and mandible. Lingual bone remodeling did not reveal any significant differences among the groups in either jaw.

Conclusion: Buccal bone remodeling is significantly more extensive around immediate implants placed in multiple contiguous tooth extraction sites compared to immediate implants placed in single tooth extraction sites.


CHALLENGES FACING POSTGRADUATE TRAINING IN FAMILY MEDICINE IN SAUDI ARABIA: PATTERNS AND SOLUTIONS

Omer Abdulaziz Al Yahia, Yahia M. Al-Khaldi
Ministry of Health, Qassim, Saudi Arabia.
E-mail: oay1386@hotmail.com

Objective: The objective of this paper is to show the challenges that are faced by the Family Medicine Training Programmes in the Kingdom of Saudi Arabia as well as suggest appropriate and practical solutions.

Materials and methods: This study was conducted from 2010 - 2013 using a semi-structured questionnaire to achieve the objective. The questionnaire was designed and completed by the investigators during their visits to accredit the training centres all over the Kingdom. It consisted of questions concerning the trainers’ and trainees’ opinions regarding all the aspects of training. Another tool used was the accreditation checklist, which contained a comprehensive list of training structures and processes mandatory for any training centre. The accreditation checklist and questionnaire were reviewed by the investigators after visiting all the training centres. The challenges were then classified manually and solutions were discussed with participants and then approved by the members of the Accreditation Committee.

Results: Seventy-five training centres were visited and 250 trainees along with 75 trainers participated in this study. Twenty-five challenges were identified and classified under 6 major groups. The practical solutions to these challenges were discussed with participants and then approved by the investigators.

Conclusion: This study showed that Family Medicine Training in the Kingdom of Saudi Arabia faces many different challenges. Early identification along with key solutions to these difficulties is extremely important in the efforts to produce a new generation of competent Saudi Family Physicians who can improve
the quality of healthcare for the population of Saudi Arabia.

Conclusion:

Managing the child behaviour in the dental clinic is the success key to provide a comprehensive treatment in the normal clinical setting.

Treatment objectives:

- Solving the child’s complaint
- Restoring all carious teeth
- Maintaining a state of adequate oral hygiene practice with little non-visible plaque and promoting the child’s psychological well-being and self-esteem, which eventually will have a positive impact on the child’s dental and general health.

Treatment outcome:

The child was followed up for a period of six months with excellent prognosis as assessed clinically and radiographically. Excellent oral hygiene was maintained with no new or secondary caries detected.

Abstracts - 2nd SCHS International Conference April 2015

COMPREHENSIVE PAEDIATRIC DENTAL CARE; CHANGING SMILE, CHANGING LIFE!

Adel A. Al-Rusayes
Ministry of Health, Riyadh, Saudi Arabia.
E-mail: arusayes@hotmail.com

Introduction:

Paediatric dentistry aims to improve oral health in children and encourage the highest standards of clinical care. In providing oral health care for children, a continuum of nonpharmacological and pharmacological behaviour guidance techniques may be used by dental health care providers. Promoting a positive dental attitude, safety and quality of care is of the utmost importance. Oral health has an impact on overall health and failure to provide the dental needs for a child has serious consequences. This case report shows a comprehensive dental treatment of a child under normal clinical settings.

Clinical report:

A 5-year 4-month-old healthy Saudi girl presented to the dental clinic complaining of pain on the lower left side of her mouth. Clinical and radiographic examinations showed multiple carious lesions, destructive restorations, and an abscessed tooth (#75). The dental treatment provided consisted of an emergency phase to solve the child’s complaint, followed by a comprehensive restorative dental treatment. Provided treatment included different types of restorative work suitable to a paediatric patient.

Treatment objectives:

- Solving the child’s complaint
- Restoring all carious teeth and teeth with defective restorations, maintaining a state of adequate oral hygiene practice with little non-visible plaque and promoting the child’s psychological well-being and self-esteem, which eventually will have a positive impact on the child’s dental and general health.

Treatment outcome:

The child was followed up for a period of six months with excellent prognosis as assessed clinically and radiographically. Excellent oral hygiene was maintained with no new or secondary caries detected.

Conclusion:

Managing the child behaviour in the dental clinic is the success key to provide a comprehensive treatment in the normal clinical setting.

DRUG NAME ABBREVIATION IN THE PRESCRIPTIONS LEADING TO MEDICATION ERRORS IN PRINCE SULTAN MILITARY MEDICAL CITY (PSMMC)

Bedor A. AlOmari, Sulaiman Alrashid

Introduction:

The use of some abbreviations and symbols has been identified as an underlying cause of serious, even fatal medication errors due to not all practitioners interpreting abbreviations uniformly.

Objectives:

To estimate the percentage of drug name abbreviation use in prescriptions.

Method:

We conducted a prospective cross-sectional study for all the prescriptions in outpatient pharmacy in PSMMC (building 1) for two weeks from 19 February to 2 March 2011, then counted the numbers (6254 prescriptions) and isolated the prescriptions that contain drug name abbreviations like: M.V, M.W, SZ, FeSO4, 10α, NS, R, vit c, vit e, etc., and counted the number of abbreviations in prescriptions.

Results:

The finding from this study was that 2.24% of the prescriptions contain unapproved drug name abbreviations and 97.67% of the prescriptions had not abbreviated in the drugs’ name.

Conclusion:

It was found that more than 2% of the prescriptions could include unapproved drug name abbreviations that could lead to medication errors, which could be lethal. This result is just only from uses of unapproved drug name abbreviations. What about the other prescribing errors like: Illegible handwriting, inaccurate medication history taking, inappropriate use of decimal points and use of verbal orders.

FINDINGS FOLLOWING WITH DRUG-ELUTING BEADS

Abdulrahman Albatly, Mohammad Arabi*, Khalid Almanea, Ali Albenmousa, Faisal Alahmari, Khalid Bzeizi

Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: aab839@gmail.com

Purpose:

To describe the parenchymal changes following DEB-TACE for unresectable HCC and to correlate these findings with tumour response and the post-procedure changes in liver functions.

Materials and methods:

Two independent radiologists retrospectively evaluated the post-procedure followup CT scans for parenchymal changes including bile duct injuries, hypodense ill-defined areas and perilesional parenchymal enhancement. Target lesion response was assessed according to the mRECIST criteria. Between 2011 and 2014, thirty-one patients (60% males, mean age 66.7 years) with unresectable hepatocellular carcinoma underwent total of 50 TACE procedures using drug-eluting beads loaded with 75 mg of doxorubicin. Correlation was made between the imaging findings and tumour response as well as the post-procedure changes in liver function tests at the time of followup.
Results: Evaluation of post-procedure CT scans at mean followup time of 68.6 days showed that the most common findings are perilesional rim enhancement (34%) and ill-defined hypodense areas (34%), followed by bile duct dilatation (22%) and periportal oedema (14%). Most of the baseline characteristics were unable to predict post DEB-TACE parenchymal changes except age where older patients had more bile duct dilatation (p = 0.042), HCV patients developed more parenchymal hypodensities (p = 0.041) and HBV patients had more parenchymal enhancement (p = 0.034). Baseline Child and MELD scores did not predict any of the CT findings. Post procedure LFT changes did not correlate with CT changes except total bilirubin which was higher in patients who developed periportal oedema (p = 0.023). There was no statistical correlation between objective response (70%) and the incidence of CT changes.

Conclusion: Our analysis suggests that DEB-TACE primarily affects the target HCC lesion and to a lesser extent the adjacent parenchyma. Post-procedure CT changes poorly correlate with underlying chronic liver disease and post procedural changes in LFTs. There is no correlation between objective response and the presence of parenchymal changes on CT.

Keywords: Drug eluting beads (DEB), Transcatheter Arterial Chemoembolization (TACE), HCC.

INCIDENCE OF HYPOGLYCEMIA IN TYPE 1 DIABETES PATIENTS WHO FAST RAMADAN: INSULIN PUMP COMPARED TO MULTI-DOSE INJECTION USING INSULIN GLARGINE AND ASPART

Reem Alamoudi1, Maram Alsubaiee2, Ali Alqarni2, Saleh Aljaser3, Yousef Saleh3, Abdulsalam4, Waleed Altamimi5
1Department of Medicine, National Guard Hospital - Dammam, 2Department of Medicine, National Guard Hospital – Alhassa, 3Department of Medicine, National Guard Hospital – Riyadh, 4Biostatistics unit, King Abdullah International Medical Research Center, 5Laboratory Department, National Guard Hospital - Riyadh, Saudi Arabia. E-mail: amoudir@ngha.med.sa

Introduction: Fasting during the holy month of Ramadan is associated with risk of hypoglycemia and other acute glycemic control disturbances. Though exempt from fasting, many patients with type1 diabetes (T1DM) choose to fast. The effect of fasting during Ramadan on rate of hypoglycemia is not known with certainty and managing T1DM during fasting is very challenging. Very few studies have documented the safety and/or efficacy of different insulin regimens on fasting. Continuous subcutaneous insulin infusion (CSII) management offers the advantage of flexibility and precision to administering insulin and has been proven to reduce severe hypoglycemia compared to multi-dose insulin injection (MDI). We hypothesized that CSII would be associated with less hypoglycemic events during fasting Ramadan compared to MDI without deterioration in glycemic control. Results of this study will fill a current gap in knowledge and may contribute to development of future guidelines for the management of T1DM during Ramadan.

Objectives: To determine if insulin pump in patients with T1DM have less rates of hypoglycemia during fasting Ramadan compared to multi-dose injection.

Method: A small cohort of patients with T1DM above the age of 14 years on either CSII or MDI, and who fast Ramadan were recruited from three diabetes clinics in three different cities in Saudi Arabia. Demographic data and data on glycemic control were collected before, during, and after Ramadan using questionnaire, glucometer (SMBG) and continuous glucose monitoring (CGM) data.

Results: A total of 156 patients were studied. 61 patients in pump group vs 95 patients in MDI group. The mean age was between 21.3 - 23.4 (± 6.1) years, most of them female participants, mean duration of diabetes 9 - 10 years in both groups. The incidence of mild hypoglycemia (< 80 mg/dl) by SMBG was 13.6 (± 16.1) in pump group vs 7.1 (± 7.4) in MDI group but the incidence of severe hypoglycemia (< 50 mg/dl) was more in MDI group mean of 5.04 (± 4.5) in pump group. In CGM data, we found low excursions were higher in MDI with 4.7 ± 3.2 vs 3.5 (± 1.9), Glucose variability was worse in MDI group as well. Breaking fasting days was more in MDI group with mean of 5.7 (± 5.8) days vs 4.1 (± 5.3) in pump group and in most of the patient hypoglycemia was the cause. Weight decreased in both groups but more in pump group from 69.3 (± 21.2) to 67.0 (± 17.1) vs 66.2 (± 15.1) to 64.6 (± 14.3) in MDI group. There was no significant change in glycated haemoglobin in either group in pre and post Ramadan: 8.0 ± 1.1 to 8.4 (± 1.3) in the pump group vs 8.8 (± 1.7) to 9.3 ± 02.1 in MDI group. fructasamine mean change in pre and post Ramadan 385.6 ± 76.1 to 392.8 ± 60.1 in pump group vs 409.2 ± 95.5 to 405.9 ± 84.4 in MDI group. HbA1c and Fructasamine worsened with fasting in both groups. No DKA during Ramadan in either group. Two hospitalizations documented in MDI group, one due to severe hyperglycemia and the other due to severe hypoglycemia.

Conclusion: Fasting during Ramadan is well tolerated in patients with T1DM on both MDI and pump therapy with no major complications. Although mild hypoglycemia is more in pump, MDI is associated with higher rate of severe hypoglycemia and breaking down fasting days.

Disclosures: RA, AQ, SJ, YS, have served in many pharmaceutical advisory boards and received educational meeting support.
Background and objective: Foreign body (FB) ingestion is a common problem among pediatric populations. Several studies highlighted some differences between Asian and Western pediatric gastrointestinal (GIT) foreign body (FB) injuries. There are no published epidemiologic studies about FB ingestion among Saudi children, which prompted us to conduct a research to determine the epidemiologic characteristics of FB ingestion in Saudi children and identify high risk FBs.

Methods: We searched the hospital PACS using “foreign body”, “coin”, “battery”, “hair clip”, or “nail” in pediatric age group as key words, during the period from 2007 to June 2014 and we collected 2024 MRN. Inclusion Criteria: Children between First day of life and 16 years of age whom ingested foreign body in the GI tract. Exclusion criteria: We eliminated FBs inhaled into the chest or FBs present in other sites other than the GIT. The hospital electronic medical record and endoscopy reports of the included study subjects were then reviewed to gather demographic, clinical, and endoscopic findings. Major complication was defined as occurrence of GIT perforation/fistula or esophageal stricture. Presence of mucosal erosion or ulceration defined minor complication.

Results: A total of 421 cases of GIT FBs were identified during the study period (males 255 (60.6%); female 166 (39.4%), mean age 4.4 years ± 2.7 years). Three hundred and six FBs passed GIT spontaneously (72.6%), upper endoscopy was performed to remove FBs in 100 cases (23.8%), and 6(1.4%), FBs were removed by surgery and 7 cases by other intervention (1.7%). The most common ingested FB was coin (98 cases, 23%), followed by button battery (82 cases, 19.5%), nail (61 cases, 14.5%), metallic FB (63 cases, 15%), then hair clip (19 cases, 45%). 89 FBs (21.1%) site of ingestion in the stomach. Major complications occurred in 14 cases (3.3%, 6 due to batteries, 2 due to magnets, 5 due to metallic FB, 1 due to hair clip). Minor complications occurred in 29 cases (6.9%, 14 due to batteries, 3 metallic FB, 7 coins, 3 hair pin, 1 nail and 1 chicken cartilage).

Conclusion: Young male children are susceptible to FB ingestion. The vast majority of FB ingestions have benign course and spontaneously pass GIT; however battery, metallic FB, and magnet are associated with high risk of major complications.
colostomy may be more favourable to divided colostomy for ARM patients.

PREOPERATIVE BILIARY DRAINAGE: TO DRAIN OR NOT

Saud AlMuhummadi, Deena Hadedeyah, Hanan Alansari
King Faisal Specialist Hospital & Research Centre, Jeddah, Saudi Arabia.
E-mail: H.k.alansari@gmail.com

Background: Obstructive jaundice caused by distal biliary tree obstruction can hold a wide differential diagnosis. The pathophysiological effects of hyperbilirubinemia and the high rate of complications postoperatively with jaundiced patients in comparison to non-jaundiced patients, both in which surgery is planned as their definitive treatment have led to the introduction of various modalities of bile drainage in an attempt to avoid these complications. Uncertainty as to the benefit of preoperative biliary drainage has led to differing approaches.

Objectives: To determine whether preoperative biliary drainage in patients with obstructive jaundice due to periampullary pathology who are candidates for resection will increase their postoperative morbidity.

Method: A retrospective study was conducted with data collected from one referral tertiary center (King Faisal Specialist Hospital and Research Center Gen. Org.-Jeddah, Saudi Arabia) between 2008-2014, in which all patients who underwent pancreatico-duodenectomy for periampullary pathology (34 patients), 13 patients (group1) out of 34 underwent preoperative biliary drainage. 21 patients (group 2) underwent surgery with no preoperative drainage. Multiple variables were assessed including the time between preoperative drainage and surgery, bilirubin level, postoperative adverse events.

Results: Pancreatic fistula in 1 patient (G2). Biliary fistula in 1 patient (G2). Abscess collection in 2 patients (G2). Wound infection in 6 patients (G1) and 2 patients in (G2). Wound dehiscence in 1 patient (G1) and 1 in (G2). Atelectasis in 2 patients (G1) and 3 patients in (G2). Intraoperative haemorrhage in 1 patient (G2). Postoperative bleeding in 1 (G1) and 1 in (G2), PE in 2(G2), DVT in 1(G1). Lymphatic duct injury in 1 patient group (G2).

Conclusion: Postoperative wound infection in patients who underwent preoperative biliary drainage is higher (46% G1 compared to 9.5 % G2), though the same group had a lower risk for other major complications with (37.76% G1) when compared with (42.85% G2). Further multivariate analysis with larger sample size might be needed to evaluate the link between others complications and obstructive jaundice.

TWO-APPROACH ASSESSMENT OF TOBACCO EXPOSURE AMONG CHILDREN, AND ITS RELATION TO BRONCHIAL ASTHMA: A CASE CONTROL STUDY IN RIYADH

Afraa Talal Ali Barzanji
E-mail: afraa1984@hotmail.com

Background: Bronchial asthma (BA) is the most common chronic disease among children and its prevalence is growing. Biological plausibility was recognized between exposure to tobacco smoke and BA, but there is scarcity of recent and local analytical studies that allow comparison of exposure to tobacco smoke in childhood in relation to BA occurrence and which test this both subjectively and objectively.

Purpose: To assess the association between household tobacco exposure and BA occurrence among children, Riyadh, 2013 - 2014.

Research methodology: A case control study was carried out in King Khaled University Hospital, Riyadh. With a ratio of 1:1, frequency matched by age and sex, a specially modified questionnaire was used for data collection, in addition to cotinine measurement.

Result:
• Fathers of cases were 5 times more likely to quit smoking, than of controls.
• Children’s exposure to smoking during relatives’ visits was significantly associated with BA (p = 0.004).
• Household tobacco exposure was associated with higher risk of recurrent respiratory tract infections (RTI) (p = 0.026).
• Recurrent RTI was associated with BA: OR (95% CI) = 1.6 (1.057, 2.589).
• History of atopy was effect modifier of the relation between household tobacco exposure and BA.
• Tobacco exposure among children was under-reported by the questionnaire-interview in comparison to cotinine results; sensitivity of subjective method was 34%.

Conclusion: This study revealed a relation between exposure to tobacco indoor smoke during relatives’ visits. Tobacco exposure was underestimated by the use of questionnaire. There was gene environmental interaction.

Recommendations:
• Parents to give up smoking to protect children from RTI.
This study could guide further researches in the future, such as using cotinine to measure compliance with an educational program for cessation/prevention of smoking.
A MULTIDISCIPLINARY APPROACH TO AESTHETIC DENTISTRY

Abeer AlSonbul
Dental Department, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: aalsounble@gmail.com

The term “oral rehabilitation” is a phrase used to encompass several levels of oral therapy intertwined with an artistic expression that feeds on creativity, imagination and fundamental scientific guidelines. This case discloses that extensive dental treatment should be proposed with an interdisciplinary team approach, which harbours the advantages of continuity and shared responsibility for therapy decisions. Full-mouth rehabilitation continues to be the biggest challenge to any clinician in restorative dentistry. It requires efficient diagnosis and ornate treatment planning to develop ordered occlusal contacts and harmonious articulation in order to optimize stomatognathic function, health and aesthetics, which then translates to patient’s comfort and satisfaction. The multiple decayed, missing teeth and the collapse of posterior teeth result in the loss of normal occlusal plane and the reduction of the vertical dimension of occlusion. This case report presents a full mouth rehabilitation of a 22-year-old patient by providing a systematic approach to optimize diagnosis, treatment planning and resolve aesthetic as well as functional demands provisionally, which is an essential blueprint to the final restorative procedures.

CLINICAL PERFORMANCE OF PORCELAIN LAMINATE VENEERS FOR 3 TO 8 YEARS OF CLINICAL SERVICE

Amira Al Hazmi1, Reem Al-Dhalaan2, Noora Al-Juhani3, Mona Al-Wakeel3
1Senior Registrar in Restorative Dentistry, Prince Salman Hospital, 2Consultant in Restorative Dentistry, King Saud Medical City-RDC, 3Registrar Prince Sultan Military Medical City Riyadh, Saudi Arabia. E-mail: dramirah@hotmail.com

The aim of this retrospective clinical study was to evaluate clinical quality, success rate, and survival-rate estimation of porcelain laminate veneers (PLVs) for 3 - 8 years of clinical service offered at the Postgraduate Restorative Programme Clinics. Fifty-six (56) patients treated by restorative residents between 2006 and 2010 at four accredited centers in Riyadh were examined. The patients included in this study received 1 - 12 veneers individually with a total of 235 units. All PLVs were visually inspected using eye-loupe magnifier (Rose 3.5X-R) with dental-mirror, and probe and clinically examined with wax-free dental floss. Each restoration was photographed and examined following modified-USPHS criteria. Additionally, all personal information as well as any post-treatment complaints were recorded. Results were entered into computer database and analyzed using a statistical package for social sciences (SPSS). A descriptive study graph, percentage and tables were made for all items. A cumulative success rate of 78% and absolute failure rate of 12% were found. Six out of nine fractured PLVs were canines due to bruxism. Debonding of five PLVs and six out of eight discoloured veneers received RCT, while six patients had marginal-discoloration. Cracks were predominantly linked to bruxing including three incidences of caries as well as one necrotic central incisor.

In conclusion, bruxism had a major influence on treatment-outcome, resulting in a greater risk of failure. RCT teeth discolored over time and affected the shade of the PLVs, with a high incidence of marginal discolouration. Thus, critical case selection is essential for long-term success for PLVs.

CHARACTERISTICS OF DOWN SYNDROME SUBJECTS IN A SAUDI SAMPLE

Mohammed A. Korayem1, Eman A. Alkofide2
1Specialist in Orthodontics, 2Resident in SBO, Ministry of Health, Riyadh, Saudi Arabia. E-mail: makorayem@hotmail.com

Objective: To compare the cephalometric characteristics of Down syndrome (DS) subjects with those of normal subjects.

Materials and Methods: Cephalometric radiographs of 60 Saudi DS subjects and 60 controls with specific inclusion criteria were used. Descriptive statistics were used to describe the quantitative and categorical variables, and the Student’s t-test for two independent samples was used to compare the mean values of quantitative variables.

Results: SBa and SN were higher in controls than in DS subjects, whereas the NSBa was significantly higher in DS subjects than in controls. SNA, Co-A, ANB, and A-Na perp of controls were higher than the DS subjects. However, SN-MP, PP-MP, ANS-Me/N-Me, Y-axis, and Ar-Go-Me of the DS subjects were higher than those of the controls. In addition, U1-NA, U1-NA mm, L1- NB, and L1-NB mm of the DS subjects were also higher than the controls with a more acute U1-L1 angle in DS. SN was larger in controls than in DS, whereas LL-E and UL-E of the DS subjects were higher than the controls.
**Conclusions:** Differences between DS subjects and controls can be found when examining cephalometric radiographs. Anterior and posterior cranial base lengths are shorter with a backward inclination of the posterior cranial base in DS subjects. DS subjects present with a retrognathic maxilla and shorter effective length, with an increased LFH and a hyperdivergent mandible. Bimaxillary dental protrusion can also be expected in DS subjects with prominent lips and a reduced nasolabial angle.

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**DIGITAL PLANNING IN DENTAL IMPLANT TREATMENT**

Mohammed Ahmed Al Attas  
Dental Department, King Saudi Medical City, Riyadh, Saudi Arabia.  
E-mail: dr.attas988@hotmail.com

Recent development in digital technology is rapidly changing the way we approach planning and treating patients with dental implant supported restorations. Predictable outcomes are routinely derived through a coordinated effort between the restorative dentist, surgeon and technician.

A 52-year-old healthy male with edentulous maxillary and mandibular jaw presented to our dental clinic seeking replacement of his missing teeth by fixed prosthesis. Using the digital imaging technique for dental implant placement, we placed 16 dental implants distributed as 8 implants in the upper and 8 implants in the lower arches with immediate loading of fixed provisional prosthesis on the same day.

Digital planning in dental implant treatment is less invasive, more efficient, accurate and predictable. It prevents mistakes and unpleasant surprises during implant surgery, and it also more comfortable and less painful for patients. The use of digital imaging technology in the field of implant dentistry improves the practice of dentistry and reduces the risk of complications for patients.

**DEVELOPING A COURSE THAT PREPARES DENTAL STUDENTS IN SAUDI ARABIA TO DELIVER TREATMENT TO INDIVIDUALS WITH DISABILITIES**

Salma Sami Al-Shehab, Bashir Hamad, Mohamud Salaad Mohamud  
Ibn Sina Dental Clinic, Dammam, Saudi Arabia.  
E-mail: ms.dentist@hotmail.com

**Introduction:** Patients with disabilities do present difficulties in maintaining good oral hygiene; this surely puts them at high risk to develop rampant dental disease. Generally, they require special adaptations during dental appointments.

**Objectives:** Develop a specific course for undergraduate dental students in Saudi dental schools, to ensure adequate clinical and basic science preparation, and to provide dental care for special-needs patients.

**Methods:** The six–step approach curriculum development and the module design format developed by Hamad (1985, modified 1992) were used. The latter contains different guidelines, such as: Course title, duration, intended students, rationale, educational objectives, education strategies, work plan, students’ assessment, evaluation, etc.
Results: Five major course units were developed accordingly, containing a total of 71 specific learning objectives, classified into three domains: Cognitive, attitude and skills. Programme implementation consisted of 5 steps: Identifying resources, support and administration, addressing potential barriers, introducing the course and programme evaluation. The key questions of evaluation considered: curriculum, faculty and instructors, students, programme organization and teaching/learning methods. Continuous assessment relied on performance in PBL, tutorials, lab and clinical sessions through the OSCE. The final assessment was based on final written examination through MCQs, SAQs, and MEQs as well as final case study presentation. Conclusion: Dental schools need to provide students with the knowledge, skills and positive attitudes to meet the oral health need challenge of ignored groups within their communities. The needs of patients with disabilities can be met through delivering the required educational material as part of the curriculum.

SELF-INFLICTED PALATAL SOFT TISSUE INJURY

Sumaiya Arfin, Saima Yunus Khan
Dr. Ziauddin Ahmad Dental College and Hospital, Aligarh, India.
E-mail: misbahularfin@yahoo.com

During initial years of development, a child indulges in various activities, some productive and some destructive. One of the most common destructive acts involve the oral cavity causing self-inflicted injury of surrounding structures. This is a case report of a 7-year-old male patient with pain and pus discharge in the anterior third of the right half of the palate. Upon questioning, the patient admitted traumatizing his palatal mucosa with his fingernail followed by trauma with a sharp object. The patient also had a self-inflicted wound on his left forearm, which was superimposed with infection resulting into a pustule. This study aims at highlighting the self-inflicted injury amongst paediatric patients and the importance of taking thorough and complete history which reveals relevant information. The physician/dentist should be aware of such incidences which are quite widespread.

REGENERATIVE TREATMENT FOR A NECROTIC IMMATURE PERMANENT CENTRAL INCISOR: REPORT OF TWO CASES (YOUNG AND ADULT)

Ziyad Mohammed Al-Abdulsalam
Ministry of Interior, Riyadh, Saudi Arabia.
E-mail: salami400@hotmail.com

Introduction: Arrested root development following pulp necrosis can lead to weak root structure with thin dentinal walls, making the tooth susceptible to fracture and reducing its survival rate. Endodontic treatment of immature permanent teeth with necrotic pulp, with or without apical pathosis, poses several clinical challenges. Historically, multiple visit apexification with calcium hydroxide was the treatment of choice in necrotic immature teeth to induce formation of an apical hard tissue barrier. While this approach was successful, long-term use of calcium hydroxide has several disadvantages that includes multiple treatment appointments. It depends on either the patient or the parent’s commitment, and it undermines the mechanical strength of dentin. Apical barrier technique or mechanical apexification using mineral trioxide aggregate was introduced as an alternative technique. None of the aforementioned treatment approaches resulted in continued root development and strengthening of root structure, and therefore, the long-term structural integrity of the teeth may be compromised. Currently, regenerative endodontic treatment (revascularization), which is the use of biologically based procedures designed to replace damaged tooth structures is a valuable treatment in immature necrotic teeth that allows the continuation of root development. Therefore, the purpose of this report is to present two cases of pulp revascularization in an immature necrotic tooth with one-year follow-up. Method: Two male patients (an 11-year-old and a 31-year-old) presented at the Department of Endodontics complaining from slight discomfort with history of trauma to the upper right central incisor. The medical history was not remarkable. Clinical examination revealed crown fracture with pulp exposure for the 11-year-old, and a discolored but intact crown without caries or fracture for the 31-year-old. Vitality testing with cold and EPT elicited a negative response and was also slightly symptomatic with percussion and palpation test. Periodontal probing was within normal limits. Periradicular radiographic examination showed that both teeth had an incompletely developed apex and a periradicular radiolucency. The diagnoses for both teeth was pulp necrosis with symptomatic apical periodontitis. The patient and parents of the child were informed of the plan (regenerative endodontic) including the potential risk before giving their consent to the treatment. Result: At the 1-year follow-up examination, the patient continued to be asymptomatic, with no signs of the sinus tract. The radiograph showed complete resolution of the radiolucency and slight thickening of the dental wall (for the 11-year-old). Regarding the 31-year-old patient, the x-ray revealed a reduction of the periradicular radiolucency, with continued root development including increased dentinal wall.
thicknness. The cold sensitivity, percussion, and palpation tests were performed, but the response was always negative. The tooth has remained functional.

**Conclusion:** Revascularization could be effective for managing infected immature permanent teeth and it may become a standard technique in treating such a cases.

**EMERGENCY MEDICINE AND CRITICAL CARE**

**ULTRASONOGRAPHY FOR THE DIAGNOSIS AND MANAGEMENT OF PATIENTS WITH CLINICALLY SUSPECTED SKIN AND SOFT TISSUE INFECTIONS: SYSTEMATIC REVIEW OF THE LITERATURE**

Abdulmohsen Alsaawi³, Khaled Alrajhi¹, Abdussalam Alshehri², Abdulmohsen Ababtain¹,
Sami Alsalamy¹

¹Department of Emergency Medicine, King Abdulaziz Medical City, 
²College of Medicine, King Saud Bin Abdulaziz University for Health Sciences, 
³Prince Sultan Military Medical City, Riyadh, Saudi Arabia.

E-mail: Mohsen.ababtain@gmail.com

**Background:** Patients with skin and soft tissue infections (SSTI) are commonly encountered. The distinction between cellulitis and abscess is often made clinically. Ultrasound use may increase the diagnostic accuracy and improve treatment decisions in those patients.

**Objectives:** To determine the diagnostic accuracy of ultrasound and its impact on management decisions in SSTI patients.

**Methods:** We searched electronic databases for primary studies including: MEDLINE, EMBASE and CINAHL from their inception to April 16, 2014. We also searched conference proceedings, references of retrieved articles and contacted field experts. QUADAS-2 tool was used to assess the quality of each full-text publication. Data were analyzed by RevMan 5.2.

**Main results:**
- Five studies (n = 710) met our inclusion criteria.
- A meta-analysis was not performed because of significant heterogeneity.
- In cases of indeterminate clinical assessment, there was an increase in sensitivity from 43.7% to 77.6%.
- The use of ultrasound has led to significant and appropriate changes in management decisions in 16% to 39%.

**Conclusion**
- Ultrasound could improve the diagnostic accuracy and improve management decisions in patients with SSTI, especially with indeterminate clinical assessment.
- Most of our findings did not achieve statistical significance.
- Further research is required to confirm these findings.

**AWARENESS AND PRACTICE OF PAEDIATRIC FIRST-AID AMONG PARENTS IN SAUDI ARABIA: CROSS-SECTIONAL STUDY**

Afnan Almass, Batol Alshahrani, Areej Almweisheer, Abdullah Alshlewi

King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia.

E-mail: afnan.almass@hotmail.com

**Background:** Childhood injuries are the leading cause of death for children worldwide. No studies have been done regarding assessment of paediatric first-aid knowledge among Saudi parents and related childhood injuries and its prevention.

**Objective:** To assess the paediatric first-aid knowledge and practices among Saudi parents.

**Materials and methods:** This cross-sectional study was performed among adult parents who attended tertiary patient care center at King Khalid University Hospital, Riyadh, Saudi Arabia, during the period August 2012 to February 2013. A survey questionnaire regarding paediatric first-aid knowledge based on the guidelines of American Academy of Paediatrics was employed. Descriptive statistics, Chi-square and Pearson correlation tests were used to analyze the data.

**Results:** A total of 383 subjects including 50.9% males and 49.1% females were surveyed. More than 80% (males and females) of them had high school level education. Only 12% males and 22% females had previous formal training in paediatric first-aid. Most of the Saudi parents gathered the first-aid knowledge from the media and were interested in formal training (p = 0.03). However, the knowledge about specific guidelines ranged between 16.4-93%. The correct knowledge among males and females regarding the first-aid of stings and bites (55.0 and 54.0%; p = 0.013), fever (72.25 and 66.50%; p = 0.023), cuts and scrapes (71.42 and 68.28%; p = 0.001), burns (66.33 and 60.0%; p = 0.002), nose-bleeding (66.33 and 80.0%; p = 0.002) and choking (42.25 and 41.75%; p = 0.013) were bit significant. However, differences between the first-aid knowledge of poisoning (62.0 and 53.0%; p = 0.140), eye injuries (73.40 and 68.40%; p = 0.056), fracture (72.75 and 70.25%; p = 0.086), convulsion and seizure (74.80 and 76.20; p = 0.193) were insignificant among the males and females. Surprisingly, most parents lacked the knowledge regarding the use of ice on the burns (only 27.9% aware), keeping the child in a sitting position with the head tilted slightly backward for nose-bleeds (16.4% aware), induce vomiting in case of swallowed poisoning (18.0% aware) and removing the foreign body in case of choking (22.2% aware).
**Conclusion:** Dedicated/structured education/awareness programme is needed for parents to save human life and ensure children safety and health. Except media and internet, healthcare professionals should play a more active role by providing information on child safety.

**ACQUIRED HAEMOPHILIA NETWORK: NON-HAEMATOLOGIST PERSPECTIVES**

Ahmed F Mady, Basim Huwait, Muhammad Asim Rana, Omar E. Ramadan, Abulrahman Al-Harthy, Abdulkareem Almomen

King Saud Medical City, Riyadh, Saudi Arabia.
E-mail: afmady@hotmail.com

**Background:** Acquired haemophilia (AH) is an autoimmune disease caused by an autoantibody to factor VIII (FVIII). Morbidity and mortality are high due to the age of patients, underlying diseases, the toxic effects of immunosuppression, bleeding and is in some way attributable to sequential delays in diagnosis and appropriate treatment.

**Objective:** AH usually presents to clinicians without prior experience of the disease; therefore, diagnosis is frequently delayed and bleeds are left undertreated. Therefore, improving the awareness among healthcare professionals to whom AH patients are likely to present is our main objective. Also, we believe that, optimal management of AHA requires active participation of non-haematologist physicians, pharmacists and laboratory staff with haematologists.

**Method:** For this objective, in May 2013, we carried out a survey among non-haematologist healthcare professionals including clinicians, clinical pharmacists and laboratory staff in 10 tertiary medical care Arabian Gulf centres to assess the degree of awareness regarding AH diagnosis and management as well as to address the difficulties they could face during management of such cases. To our surprise, very informative data were collected. In December 2013, at the second stage of our work, we established a network of healthcare workers among all gulf countries to continue our mission. This network has been named Acquired Haemophilia Network (AHN). Board members were designated representing 6 gulf countries including haematologists, pathologists and other healthcare specialists involved in the treatment and management of patients with AH.

A case report form (CRF) was prepared and posted on the AHN website to collect and document cases of AH.

**Results of survey:** Total responders of our survey were 1104, 953 of them were physicians, 57 laboratory staff physicians and 94 pharmacists. Out of all the physicians that responded, 42% were not aware about AH, 45% would not consider mixing test for isolated prolonged aPTT and 47% of them would start bypassing agents in bleeding AH, but only 26% would use inhibitor eradication immediately upon confirmation. Almost half of the clinicians showed the haematologist’s response in more than 24 hours. The majority of clinicians, lab and pharmacists agreed that the lack of awareness about this disorder and its complications is the most important obstacle in achieving the optimal management of AH. Despite shortage of haematologists in the Arab Gulf countries, 46 of them do not believe that increasing the awareness among healthcare professionals can empower them to start bypassing agents and inhibitor eradications in such fatal disorders.

**Expected outcomes of AHN:** We expect to increase awareness among non-haematology physicians about AH, gather information on past and present cases of AH for case series publication and drawing expert opinion and guidelines for recognition, diagnosis and management of AH and publish gulf AH diagnosis and management consensus.

**EMPHYSEMATOUS PYELONEPHRITIS IN RENAL ALLOGRAFTS: CASE REPORT WITH BRIEF REVIEW OF CURRENT LITERATURE**

Fahad Saleh Alhajjaj, Farooq Pasha

Qassim University, Riyadh, Saudi Arabia.
E-mail: Fahad.hajjaj@gmail.com

Emphysematous pyelonephritis (EPN) is a rare disease with devastating outcomes in healthy adults, and it may affect renal allografts resulting in high mortality rate, graft loss and permanent dialysis. Presentation is highly variable and fairly nonspecific requiring higher degree of suspension. Computed tomography is the gold standard in diagnosis and staging of the disease and it is the basis of choosing different management modalities, which include antibiotics and medical support, percutaneous drainage and nephrectomy.

We report a case of a 71-year-old male who presented in septic shock, diagnosed with EPN in the emergency department, treated with antibiotics and medical support but unfortunately died on the 6th day of presentation.

No clear consensus exists on optimal management and it is unlikely to be defined soon given the rarity of the disease with only 26 case reports in the English language literature including the current report.

**EPIDEMIOLOGICAL, CLINICAL CHARACTERISTICS AND MORTALITY RISK IN CHILDREN WITH SCORPION ENVENOMATION IN QENA GOVERNORATE, UPPER EGYPT: RETROSPECTIVE DATA ANALYSIS**

Khalid A. Abd El-Baser¹, Ahmed E. Ahmed¹, Gamal M. Hasan²,³,⁴

1. Department of Pediatrics, Faculty of Medicine, Qena University, Qena, Egypt. 2. Epidemiology Unit, Department of Public Health, Faculty of Medicine, Qena University, Qena, Egypt. 3. Department of Biostatistics, Faculty of Medicine, Sultan Qaboos University, Muscat, Oman. 4. Laboratory Medicine, Al-Thika Hospital, Al-Thika, Oman.
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Author's summary: Scorpion sting is a medical emergency that necessitates properly timed management to improve its outcome. It is still representing a public health problem resulting in significant morbidity and mortality in tropical and subtropical areas, especially in the 3rd world countries. Scorpion envenomation is a life-threatening health problem in tropical and subtropical regions, particularly among children. We aimed to describe epidemiological and clinical characteristics and identify predictors of mortality in children with scorpion sting. Retrospective analysis of records of paediatric patients with scorpion sting presented to emergency and intensive care units of General Qena and South Valley University Hospitals between January and December 2013 was done. Epidemiological, clinical, laboratory data and therapeutic interventions were collected and analysed. The study included 154 patients, 93 (60.4%) males and 61 (39.6%) females, they were 101 (65.6%) > 6 years, 42 (27.3%) 2 - 6 years, 11 (7.1%) < 2 years, 107 (69.5%) from rural areas and 47 (30.5%) from urban areas. Outdoor envenomation occurred in 121 (78.6%) and indoors in 33 (22.4%); at night time in 107 (69.4%) and at day time in 47 (30.6%) patients; sting site was extremities in 140 (90.9) patients and other sites in 14 (9.1%). Thirty-one (20.13%) patients died; they had scorpion sting severity class III.

Conclusion: Identification of epidemiological and clinical features of scorpion envenomation in children may supply important data helping in development of management policies aiming at preventive control of scorpion stings and decrease its mortality.

Keywords: Scorpion, epidemiological, children, mortality.

EFFECT OF INTRAVENOUS LIDOCAINE ON THE INCIDENCE OF POST-EXTUBATION LARYNGOSPASM: A DOUBLE-BLIND, PLACEBO-CONTROLLED RANDOMIZED TRIAL

Khalid Ibrahim Al Jonaieh
King Saud University Medical City, Riyadh, Saudi Arabia.
E-mail: kaljonaieh@ksu.edu.sa

Background: Laryngospasm is one of the major complications during anaesthesia practice that could lead to potentially serious complications. There are many causes of laryngospasm. Currently, there is no proven prophylaxis for laryngospasm, and the known treatments of laryngospasm are used post-occurrence. The literature lacked trials that study intravenous (IV) lidocaine in adults compared to children. In this study, we tested the effect of intraoperative IV lidocaine on the incidence of postoperative laryngospasm in adult population.

Methods: Seventy two patients undergoing laparoscopic cholecystectomy were randomly assigned to receive either placebo (group P; n = 36) or IV lidocaine (group L; n = 36, bolus 1 mg/kg once Desflurane is discontinued) in a prospective double-blind design. Laryngospasm was graded from 0 to 3 according to the absence or presence and the severity of postoperative laryngospasm.

Results: The study was terminated early by the data monitoring committee due to an increase in the incidence of postoperative laryngospasm for safety concerns. Demographics were the same between the groups. There was statistically significant difference in the incidence of postoperative laryngospasm between groups (p = 0.0170, 95% CI 4.568% to 36.031%).

Conclusion: Our finding showed a significant effect of IV lidocaine in the adult laparoscopic cholecystectomy case group as compared to the controls. Intravenous lidocaine may prevent Desflurane induced post-extubation laryngospasm.

FAMILY AND COMMUNITY MEDICINE

EVALUATION OF HOSPITALS DISASTER PREPAREDNESS PLANS IN THE HOLY CITY OF MAKKAH: CROSS-SECTIONAL IN STUDY

Loui Alsulimani, Ali Alshreef, Hattan Bojan
King Abdulaziz Medical City, Jeddah, Saudi Arabia.
E-mail: doctorloay@hotmail.com

Background: Makkah is a holy city located in the western region of Saudi Arabia. More than 10,000,000 pilgrims are expected to visit Makkah yearly. This number impacts healthcare delivery on a daily basis and for sure during any disaster. Our study aims to evaluate hospitals’ disaster preparedness plan in the city of Makkah.

Method: A cross-sectional survey conducted on 17 hospitals in the city of Makkah (n = 17) were carried out by a questionnaire. Data on hospital characteristic and 3 key domains of disaster plan (general evaluation of disaster plan, structural feasibility of the hospitals, health worker’s knowledge and training) were collected and analyzed descriptively.
Results: A response rate of 82% (n = 14) was attained. 71% of the hospitals were governmental while the rest were private. 79% of the hospitals had a capacity of less than 300 beds. Half of the hospitals were categorized as first responders. Only 69% of hospitals reviewed their disaster plans within the preceding two years. 31% of the hospitals practice disaster drills twice a year. Majority of the hospitals (62%) did not have hazard vulnerability analysis in their plan; however, hospital Incident command system (HICS) was available in 69% of the hospitals’ plan. All hospitals mentioned availability of the supplies required in the first 24 hours of a disaster. Only 38% of the hospitals had designated area for decontamination. 38% of the hospitals have the ability to transform nonclinical area into an admission and treatment ward. Eight (62%) hospitals mentioned the ability to change a normal ward into an ICU setting. Only 54% hospitals had a protocol for increasing the number of isolation rooms, if needed, to prevent spread of an airborne infection. 77% hospitals had a designated disaster training programme for healthcare workers and only 31% of the hospitals showed a protocol in place to provide incentives for employees who participated during disasters. 

Conclusions: The survey demonstrated considerable areas of improvement in regards to disaster plan completeness and efficiency.

**OBESITY AND LIFESTYLE AMONG SAUDI BOARD RESIDENTS IN ASEER REGION, SAUDI ARABIA**

Abdullah Ali Alzahrani  
Family Medicine Aseer Region, Abha, Saudi Arabia.  
E-mail: alswidi123@hotmail.com

**Background:** It is recognized that the health of physicians directly impacts the health of the larger population. Therefore, it is desirable that physicians lead a favourable lifestyle not only for their own health but also in view of their role in providing guidance for patients.  

**Objectives:** To assess the lifestyles (nutrition, physical activity and smoking) and prevalence of obesity among resident physicians in the postgraduate training programmes of Saudi Board in Aseer region, KSA.  

**Subjects and Methods:** A cross-sectional study was conducted including all Saudi Board Residents in Aseer Region. Data were collected through a questionnaire developed by the researcher including six parts: demographic data, weight and height measurements, assessment of general health, smoking habit, physical exercise using General Practice Physical Activity Questionnaire [GPAPAQ] and nutrition assessment by Food Frequency Questionnaire. The researcher met all the respondents and measured their weight and height, then, every subject was asked to fulfill the self-administered questionnaire.  

**Results:** Out of 255 invited residents, a response rate of 82.7% has been obtained. The mean age of the respondents was 27.9 ± 2.6 years. Almost two-thirds of them (66.8%) were males. Majority of them (96.2%) were Saudi. Overweight and obesity were reported among 36% and 23.2% of the residents, respectively. Obesity was more significantly reported among male than female resident physicians (31.9% versus 7.1%), p < 0.001. Current smoking (with its all types) was reported by 10.4% of the respondent physicians. Male residents were more significantly smokers than female residents (14.3% versus 2.9%), p = 0.007. It is evident that physical inactivity and moderate inactivity were reported among 47.9% and 31.8% of residents whereas physical activity was reported among only 9.5% of them. Female residents reported more physical activity than male residents (17.1% versus 5.7%), p < 0.001. Taking of potato chips, sweets, pizza and never drinking skimmed milk were significantly associated with obesity among resident physicians.  

**Conclusion:** Frequency of overweight and obesity was high among Saudi Board residents in Aseer region while the prevalence of current smokers among them was lower than in the general population in Saudi Arabia, reflecting that the hazards of smoking are well known to them. Most of Saudi board residents in Aseer region were either physically inactive or moderately inactive.

**ANTI-ULCEROGENIC EFFECTS OF VANILLIN A FLAVOURING AGENT AGAINST ETHANOL-INDUCED GASTRIC ULCERS IN RATS**

Abdulmajid Al Sheik, Abdulrahman Al Asmari¹, Saeed Al Garni², Ibrahim Elfaki¹, Mohammed Arshaduddin¹, Ebtissam Al Meghaiseeb³, Nawaf Al Mutairi³  
¹Research Center, ²Department of Rehabilitation, ³Department of Gastroenterology, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.  
E-mail: rcpsmmc@gmail.com

Gastric ulcer is chronic and relapsing disease of the gut. Some of the common mechanisms in gastric mucosal damage include an increase in acidity and gastric secretions, production of free radicals, decrease in antioxidants and neutrophil accumulation. In this study, vanillin (4-hydroxy-3-methoxybenzaldehyde), a flavouring agent was evaluated for its gastroprotective potential in rats. Gastric secretion and acidity were measured in pylorus ligated rats. The levels of gastric wall mucus,
malondialdehyde (MDA), non-protein sulphydryls (NP-SH), myeloperoxidase (MPO), and histological changes, were used to measure the anti-ulcer activity of vanillin in ethanol (1 mL - 100%) induced gastric ulcers in rats. Oral administration of vanillin significantly reduced the gastric secretions and acidity in pylorus ligated rats and attenuated the ethanol-induced gastric lesions and ulcer index. The reduction in the levels of gastric wall mucus, and non-protein sulphhydrils NP-SH, in ethanol treated rats were significantly attenuated by pretreatment with vanillin (P < 0.01). The histological changes and the increased MDA and MPO activity were also significantly (P < 0.002) inhibited by vanillin. Taken together, our findings suggest that vanillin is a potent gastroprotective compound with strong anti-secretory, antioxidant and anti-inflammatory properties with a capacity to ameliorate ethanol-induced gastric ulcers in rats.

**ASCORBIC ACID ATTENUATES ANTI-NEOPLASTIC DRUG-INDUCED INTESTINAL TOXICITY VIA MODULATING THE EXPRESSION OF INFLAMMATORY MEDIATORS**

Abdulmajid Al Sheik, Ali M Al Zahrani1, Ahmad Al Buraidi2, Mufni Al Otaibi3, Abdul Quaiyum Khan4, Hamoud Al Shahrani5, Idrees Al Fagehi6

1Department of Oncology, 2Department of ORL H&N Surgery, 3Department of Gastroenterology, 4Research Center, 5Department of Ophthalmology, 6Department of Medicine, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

Role of inflammatory mediators has been well documented in the pathogenesis of antineoplastic drug-induced gastrointestinal damage during chemotherapy. In the present study, we have investigated the role of ascorbic acid on the modulation of inflammatory mediator expression and the associated intestinal damage in Sprague Dawley rats. Adult rats were divided into four groups. Group III and IV animals were given oral gavage of ascorbic acid (500 mg /kg b. wt.) while group I received water or normal saline for ten days (day 1 - 9). Intraperitoneal injection of 5-FU was given to group II and III animals at (150 mg/kg b. wt.) on day eight to induce gastrointestinal toxicity. Animals were sacrificed seventy-two hours after 5-FU injection. 5-FU administration causes significant elevation in myeloperoxidase activity, MDA formation and expression of COX-2, which were markedly suppressed by ascorbic acid administration. In addition, histological findings further supported the preventive potential of ascorbic acid against 5-FU induced intestinal damage.

Findings of the present study demonstrate that inflammation plays a vital role in 5-FU induced intestinal damage whereas ascorbic acid showed significant protective effect against chemotherapeutic drug induced intestinal toxicity, which may be due to strong antioxidant and anti-inflammatory potential of ascorbic acid.

**CAMEL MILK BENEFICIAL EFFECTS ON TREATING GENTAMICIN-INDUCED ALTERATIONS IN RATS**

Abdulmajid Al Sheik, Saud Al-Omani1, Abdulrahman M. Al-Elaiwai2, R. Abbasmanthiri3, Sarah A. Al-Asmari4, Majed Al Anazi5

1Department of Surgery, 2Department of Urology, 3Research Center, 4Department of Dentistry, 5Department of Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

The potential effect of camel milk (CM) against gentamicin (GM) induced biochemical changes in the rat serum was evaluated. Four groups of six albino rats were used for control, CM fed, injected with GM (i.p.) and then fed and injected with GM. The results showed that the administration of GM significantly altered the levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), and lactate dehydrogenase (LDH) activity in rat serum. CM restored these parameters to almost their normal range in group IV. Additionally, the present study showed that injection of rats with gentamicin caused an increase in malondialdehyde (MDA) and myeloperoxidase (MPO) activity while the antioxidant enzymes like superoxide dismutase (SOD) and glutathione s-transferase (GST) activity decreased significantly (P ≤ 0.05). Administration of CM significantly (P ≤ 0.05) inhibited the formation of MDA and activity of MPO and up-regulated the antioxidant enzymes (SOD and GST) activity. The overall findings of this study demonstrated that pretreatment with CM gave protection against GM induced hepatic damage possibly by inhibiting oxidative stress and inflammation, and hence camel milk can be identified as a new therapeutic agent.

**DETERMINATION OF HEAVY AND TRACE METALS IN SOME COMMONLY USED HERBS IN SAUDI ARABIA**

Ghaleb Bin Horaib1, Md. Tanwir Athar2, Abdulaziz Al Ahmari2, Abdulrahman Al Asmari2, Samia Sobki3, Abdulmajid Al Sheik4

1Department of Dermatology, 2Research Center, 3Department of Pathology, 4Department of Family & Community Medicine, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.

E-mail: rcpsmmc@gmail.com

The potential effect of camel milk (CM) against gentamicin (GM) induced biochemical changes in the rat serum was evaluated. Four groups of six albino rats were used for control, CM fed, injected with GM (i.p.) and then fed and injected with GM. The results showed that the administration of GM significantly altered the levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), and lactate dehydrogenase (LDH) activity in rat serum. CM restored these parameters to almost their normal range in group IV. Additionally, the present study showed that injection of rats with gentamicin caused an increase in malondialdehyde (MDA) and myeloperoxidase (MPO) activity while the antioxidant enzymes like superoxide dismutase (SOD) and glutathione s-transferase (GST) activity decreased significantly (P ≤ 0.05). Administration of CM significantly (P ≤ 0.05) inhibited the formation of MDA and activity of MPO and up-regulated the antioxidant enzymes (SOD and GST) activity. The overall findings of this study demonstrated that pretreatment with CM gave protection against GM induced hepatic damage possibly by inhibiting oxidative stress and inflammation, and hence camel milk can be identified as a new therapeutic agent.
Traditionally, the herbal drugs are well established for their therapeutic benefits. Depending upon their geographical sources, sometimes the trace and heavy metals' content may differ, which may lead to severe toxicity. So, the toxicological and safety assessment of these herbal drugs are one of the major issues in recent days. In this study, six medicinal plants namely *Elettaria cardamomum*, *Coriandrum sativum*, *Zingiber officinale*, *Nigella sativa*, *Allium sativum* and *Carum carvi* were studied for the levels of copper, zinc, magnesium, iron, lead and mercury content and thereby to assure their safer therapeutic application. A portion of the plants collected from the local market of Riyadh, Saudi Arabia, were digested with nitric acid and hydrochloric acid. Absorbance was measured through atomic absorption spectrometer and the concentration of different trace and heavy metals in the plant samples were calculated using standard calibration curve obtained by the standard solutions of different metals. The contents of heavy metals were found to be within the prescribed safety limit.

**GAS CHROMATOGRAPHIC INVESTIGATION OF ESSENTIAL OIL COMPOSITION OF THE ZAATAR (THYMUS VULGARIS) COLLECTED FROM SAUDI ARABIAN MARKET**

Abdulrahman Al Asmari¹, Md. Tanwir Athar¹, Ghaleb Bin Horaib², Khalid Al Yahya³, Hend Al Malki⁴, Abdullah Al Barrak⁴

¹Research Center, ²Department of Dermatology, ³Department of Pharmacy, ⁴Department of Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

*Thymus vulgaris* L. (thyme), locally known as “za’atar” or “zaitra”, of the family Lamiaceae is a commonly used dietary ingredient in Eastern Mediterranean region, which is believed to possess neurostimulant and general tonic properties. It is widely used in folk medicine for its expectorant, antitussive, antichronicolytic, antispasmodic, anthelmintic, carminative and diuretic properties. This work is aimed to evaluate the compounds present in the hydro-distilled oil of *T. vulgaris* available in local market of Saudi Arabia. A gas chromatography/mass spectrometric (GC-MS) method was developed for the analysis of compounds present in hydro-distilled oil of thyme. The result of this work suggests that the hydro-distilled oil of *Thymus vulgaris* has a number of chemical compounds including thymol, alpha-pinene, and carophyllene which are bioactive and act as drugs for various diseases. Thus from this study it can be concluded that the *Thymus vulgaris* may serve as a new potential source of medicines due to the presence of phytochemicals and bioactive compounds. Further in future, these components can be isolated and in *vivo* studies on animal model can be performed.

**GASTROPROTECTIVE EFFECT OF ARIPIPRAZOLE, AN ATYPICAL ANTIPSYCHOTIC DRUG, AGAINST ETHANOL-INDUCED GASTRIC ULCERS IN RATS**

Abdulrahman Al Asmari¹, Mohammed Arshaduddin¹, Ibrahim Elfaki¹, Saeed Kadasah², Abdulrahman Al Robayan³, Saeed Al Asmary⁴, Taymoor Masood Khan⁵

¹Research Center, ²Department of Psychiatry, ³Department of Gastroenterology, ⁴Department of Family and Community Medicine, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: moc.liamg@iramsala.namharludba

This investigation was undertaken to study the gastroprotective potential of an atypical antipsychotic drug aripiprazole (ARI) against gastric ulcers in rats. ARI (10, 30, 100 mg/kg) was tested for gastric secretion and anti-ulcer activity in pylorus-ligated male Sprague Dawley rats, while ethanol (1 mL 100%) treatment was used to measure anti-ulcer activities. The levels of gastric wall mucus, malondialdehyde (MDA), non-protein sulphydryls (NP-SH), myeloperoxidase (MPO), serotonin and histological changes, were used to assess ethanol-induced gastric damage. Ethanol administration to rats produced gastric mucosal injury and a high index of ulcer. Pretreatment with ARI significantly (P < 0.001), reduced the ethanol-induced gastric lesions and significantly decreased gastric secretion, and total acidity in pylorus-ligated rats. ARI also significantly attenuated ethanol-induced reduction in the levels of gastric wall mucus, and NP-SH, (P < 0.001). The histological changes and the increased MDA and MPO activity were also significantly (P < 0.001) inhibited by ARI. Ethanol-induced depletion of gastric serotonin levels were also significantly restored by pretreatment with ARI (P < 0.001).

The gastroprotective effects of ARI may be due to its anti-secretory, antioxidant and anti-inflammatory action and also due to the restoration of the depleted gastric serotonin levels.

**GENETIC STUDIES ON INFLAMMATORY BOWEL DISEASE: ROLE OF APOLIPOPROTEIN E POLYMORPHISMS IN AETIOLOGY OF ULCERATIVE COLITIS AND CROHN’S DISEASE**

Abdulrahman Al Robayan¹, Ebtissam Al Meghaiseeb³, Mulfi Al Otaibi¹, Nasser Al Mobade³, Reem Al Amro³, Meshari Al Dayel⁴
Abstracts - 2nd SCHS International Conference April 2015

1Department of Gastroenterology, 2Department of Cytogenetics, 3Department of Medicine, 4Department of Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

Genetic susceptibility plays an important role in the aetiology of IBD and the identification of genetic risk factors will help in clinical assessment, identifying therapeutic agents and prognosis of patients with IBD. Apolipoprotein E (APOE), a multifunctional protein, affects cellular immune response. The objective of this study is to examine the association of APOE variants with IBD. APOE genotyping was performed on 178 IBD patients and 200 matched controls using polymerase chain reaction and reverse-hybridization techniques. The frequencies of APOE ε2 allele and ε2/ε3 and ε2/ε4 genotypes were significantly higher in IBD patients than in controls. The frequencies of the ε3 allele and ε3/ε4 genotype were lower in IBD patients as compared to controls. The prevalence of ε4 allele was also higher in IBD patients. Our results indicated that the ε2 allele was associated with the susceptibility to IBD while ε4 allele with an early age of IBD onset and ε3 allele might be protective against IBD. No effect of gender or type of IBD (familial or sporadic) on the frequency distribution of APOE alleles and genotypes was noticed in this study. In conclusion, APOE polymorphism is associated with risk of developing IBD and early age of onset in Saudi patients.

GENETIC STUDIES ON PRIMARY GLAUCOMA: ROLE OF TNF ALPHA-AND -BETA GENES PROMOTER POLYMORPHISMS

Hamoud Al Shahrani1, Najwa Al Dabbagh1, Nourah Al Dohayan1, Misbahul Arfin2, Mohammad Tariq3, Amal Al Jaloud4
1Department of Ophthalmology, 2Research Centre, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

The cytokines play an important role in the pathogenesis of glaucoma and may regulate RGC survival or death. The role of tumour necrosis factor (TNF) is a subject of recent interest in glaucoma studies. This study was undertaken to determine the association of TNF-α (308) and TNF-β (+252) gene polymorphisms with primary glaucoma (PG). TNF-α and -β genes were amplified in 200 PG patients and 200 matched controls using amplification refractory mutation systems (ARMS)-PCR methodology to determine the allele/genotype frequencies. The frequency of GA (TNF-α-308) genotype was significantly higher while the frequency of GG (TNF-α-308) genotype was lower in patients as compared to controls. It was inferred that genotype GA (TNF-α-308) was susceptible while genotype GG might be protective to PG. The frequency of GG at position +252 of intron-1 in TNF-β was significantly higher in patients as compared to controls while GA genotype was significantly lower in patients indicating that GG genotype of TNF-β (+252) might exert additive susceptibility to PG while GA might be refractory. In conclusion, TNF-α (308) and TNF-β (+252) polymorphisms are significantly associated with the susceptibility to PG in Saudis and could be used as a genetic marker for disease mapping.

GENETIC STUDIES ON SYSTEMIC LUPUS ERYTHEMATOSUS: ASSOCIATION OF APOLIPOPROTEIN E GENE POLYMORPHISMS

Hannan Al Rayes1, Misbahul Arfin2, Mohammad Tariq2, Abdulrahman Al Asmari2, Reem Al Showair1
1Department of Medicine, 2Research Centre, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

The role of apolipoprotein E (APOE) in modulating inflammation and oxidation is crucial in autoimmune diseases. APOE genotyping was performed in 118 systemic lupus erythematosus (SLE) patients and 200 controls using PCR followed by reverse-hybridization and restriction fragment length polymorphism techniques. The results showed significantly low frequencies of ε3 allele and ε3/ε4 genotype in SLE compared to the controls (P = < 0.01). The frequencies of the ε4 allele and ε3/ε4 genotype were significantly higher in patients compared to the controls (P = < 0.01). APOE ε2 allele was found in only 3 patients while absent in controls. Further ε4 allele and ε3/ε4 genotype were significantly higher in SLE patients with renal involvement while ε2, ε4 alleles and ε2/ε3, ε3/ε4 genotypes were significantly higher in patients with neuropsychiatric symptoms (P = < 0.05). In contrast, SLE patients without renal or neuropsychiatric involvement had significantly higher frequencies of ε3 allele and ε3/ε4 genotype (P = < 0.01). The genotype ε4/ε4, ε2/ε4 and ε2/ε2 were absent in both the patient and control groups. In conclusion, APOE ε4 allele is associated with susceptibility/clinical manifestations of SLE and can be a risk factor while ε2 alleles may increase severity. Allele ε3 is protective for SLE in Saudis.

GENETIC VARIANTS OF INTERLEUKIN-10 GENE PROMOTER ARE ASSOCIATED WITH VITILIGO: CASE CONTROL STUDY

Fahad Al Harthi1, Ghaleb Bin Horaib1, Abdulrahman Zouman1, Misbahul Arfin2, Mohammad Tariq2, Ahmed Al Awad3, Abdulrahman Al Jamal1
1Department of Medicine, 2Research Centre, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

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1Department of Medicine, 2Research Centre, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
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GENETIC VARIANTS OF INTERLEUKIN-10 GENE PROMOTER ARE ASSOCIATED WITH VITILIGO: CASE CONTROL STUDY

Fahad Al Harthi1, Ghaleb Bin Horaib1, Abdulrahman Zouman1, Misbahul Arfin2, Mohammad Tariq2, Ahmed Al Awad3, Abdulrahman Al Jamal1
1Department of Medicine, 2Research Centre, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmc@gmail.com

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The promoter region of human Interleukin-10 gene is highly polymorphic and has been associated with numerous autoimmune diseases. Recent studies have linked vitiligo with defective autoimmune system. This study is aimed to explore a possible association between IL-10 gene polymorphism and vitiligo in Saudi population. This case control study consisted of 334 Saudi subjects including 123 vitiligo patients and 211 matched controls. Genomic DNA was extracted from the blood samples of vitiligo patients and healthy controls using QIAamp DNA mini kit (Qiagen CA, USA). Interleukin-10 gene was amplified by polymerase chain reaction (PCR) using Arms primers to detect any polymorphism involved at positions -592, -819 and -1082. The frequencies of GG genotype at -1082, and CC genotype at positions -592 and -819 were significantly higher in vitiligo patients compared to healthy subjects suggesting that GG and CC genotypes might be susceptible to vitiligo in Saudis. On the other hand, genotypes -1082 GA, - 819 CT and -592 CA of IL-10 were more prevalent in healthy controls suggesting protective effects of GA, CT, and CA genotypes against vitiligo. This study indicates that the IL-10 gene may play a significant role in the aetiology of vitiligo among Saudis.

**INTERLEUKIN-10 GENE PROMOTER POLYMORPHISMS IN SAUDI SCHIZOPHRENIA PATIENTS**

**Saeed Al Asmary**1, **Saeed Kadasah**1, **Misbahul Arfin**2, **Mohammad Tariq**2, **Mohammad Al Asmari**2, **Sari Enani**1

1Departments of Psychiatry, 2Research Center, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.

E-mail: rcpsmmcc@gmail.com

Interleukin-10 (IL-10) gene is considered as a potential candidate gene and its polymorphisms have been reported to be linked with susceptibility to the development of schizophrenia within consistent results. The aim of this study was to examine whether the -1082A/G, -819T/C, and -592A/C polymorphisms in IL-10 gene are implicated in schizophrenia development. Molecular genotyping was performed to analyze genotypes and alleles distribution of three single-nucleotide polymorphisms (SNPs) in patients (n = 181) and healthy controls (n = 211). The frequencies of GA genotype at -1082, and CC genotype at positions -592 and -819 were significantly higher in schizophrenia patients compared to healthy subjects suggesting that GA, CC and CC genotypes are susceptible to schizophrenia. The ACC haplotype known to be associated with intermediate production of IL-10 is more prevalent in our schizophrenia patients. On the other hand, genotypes -1082 GG, -819 CT, and -592 CA were more prevalent in healthy controls suggesting protective effects of GA, CT, and CA genotypes against schizophrenia. There was no significant association of IL-10 polymorphisms with sex or positive or negative symptoms of schizophrenia. This study indicates that the IL-10 gene polymorphisms play a significant role in the aetiology of schizophrenia in Saudi Arabians patients.

**MENTAL AND EMOTIONAL ISSUES AMONG DEPLOYED MILITARY PERSONNEL**

**Saeed Kadasah**1, **Saud Al Shlash**2, **Maha Al Mohaya**3, **Faizah Al Gutami**2, **Mishal Otaibi**6

1Department of Psychiatry, 2Department of Plastic Surgery, 3Department of Dentistry, 4Department of Pharmacy, 5Department of Family & Community Department, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.

E-mail: rcpsmmcc@gmail.com

Mental problems send more men in the military to the hospital than any other cause and second highest reason for hospitalization of women military personnel other than pregnancy. The objective of this study was to review the prevalence of deployment-related mental and emotional issues among military personnel deployed in war zones. An extensive research has been undertaken to identify the mental stress related disorders experienced by troops due to deployment in Arab gulf region. After collection of the relevant studies, the data were analyzed for the prevalence of deployment-related mental and emotional issues among deployed military personnel. Systematic reviews of cross-sectional studies presented good evidence of an increased frequency of self-reported symptoms of post-traumatic stress disorder and other common mental disorders. Nearly one-third of army personnel deployed in Iraq and Afghanistan were diagnosed with mental problems. Post-traumatic stress disorder was the most common disorder, accounting for more than half (52%) of mental health diagnoses followed by anxiety disorder (24%), adjustment disorder (24%), depression (20%) and substance abuse disorder (20%). Early intervention has been shown to be effective in significant reversal of these conditions.

**MODULATION OF 5-FLUOROURACIL INDUCED GASTROINTESTINAL MUCOSITIS BY VITAMIN E: ROLE OF OXIDATIVE STRESS AND REDOX SENSITIVE TRANSCRIPTION FACTOR NF KB**

**Abdulrahman Al Asmari**1, **Abdulrahman Al Robayan**2, **Abdulguaiyoom Khan**1, **Ali M Al Zahrani**3, **Nasser Al Masri**2, **Howra Al Bayat**4

1Department of Dermatology, 2Research Center, 3Department of Family & Community Medicine, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
Mucositis, a serious issue associated with cancer chemotherapy, is characterized by intestinal inflammation and ulceration. Current study was undertaken to investigate the modulatory effect of vitamin E (vit. E) on 5-fluorouracil (5-FU) induced intestinal mucositis by targeting oxidative stress and inflammatory markers in Sprague Dawley (SD) rats. Adult rats were divided into four groups. Animals of the group III and IV were given vit. E (300 mg /kg b. wt.) while group I received water or normal saline for ten days (days 1 - 9). 5-FU was administered to group II and III animals at (150 mg /kg b. wt.) on day 8 to induce intestinal mucositis. Animals were sacrificed seventy-two hours after 5-FU injection. Vit. E supplementation ameliorated 5-FU induced lipid peroxidation, myeloperoxidase (MPO) activity, activation of NF-kB and expression of i-NOS. Histological findings further supported the modulatory potential of vitamin E against 5-FU induced intestinal damage like villus and crypt deformities. Findings of the present study demonstrate that oxidative stress and inflammation play a vital role in 5-FU induced intestinal mucositis. Vitamin E protected the mucosa against 5-FU toxicity through modulation of oxidative stress, activation of redox sensitive transcription factor and its downstream targets.

TAURINE AMELIORATES 5-FLOUROURACIL INDUCED INTESTINAL, HEPATORENAL AND REPRODUCTIVE ORGAN TOXICITY

Abdulrahman Al Elaiwai1, Fahad Al Sabaan2, Abdulquaiyoom Khan3, Saud Al Omani4, Adel Al-Harbi5 Hamad Al Akrosh6
1Department of Urology, 2Department of Endocrinology, 3Research Center, 4Department of Surgery, 5Department of Paediatrics, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmcc@gmail.com

5-fluorouracil is one of the most commonly used anticancer drugs for the treatment of various types of cancers but has potential adverse effects. Present study was undertaken to investigate the protective effect of taurine (Tau) on 5-fluorouracil (5-FU) induced adverse effects in different organs in Wistar rats. Adult rats were divided into four groups of six (n = 6) animals each. Group I served as control. Animals in groups II, III and IV were given 5-FU at 50 mg/kg body weight for four days. Tau at 50 mg and 100 mg/kg was given to the animals in group III and IV respectively, thirty minutes prior to 5-FU administration. 5-FU induced a marked elevation in the myeloperoxidase activity, which was significantly reduced by pretreatment with Tau. Histological observations of liver, kidney, intestine and testis revealed that 5-FU administration resulted in anomalies like distortion of normal cellular architecture, infiltration of inflammatory cells, and loss of cellular integrity, which were markedly suppressed by Tau pre-treatment. The findings of the present study suggest that Tau has strong preventive potential against the complications and organ toxicities induced by 5-FU and could play an important role in combinational chemotherapy to enhance the therapeutic efficacy of 5-FU.

WAR-RELATED HEALTH CONSEQUENCES IN VETERANS

Saeed Al Garni1, Ghaleb Bin Horaib2, Hamoud Al Shahrani2, Hesham Al Khashan4, Zabih Ullah5, Hala Al Qahtani4, Abdullah Al Ahmari1
1Department of Rehabilitation, 2Department of Dermatology, 3Department of Ophthalmology, 4Department of Family & Community Medicine, 5Research Center, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: rcpsmmcc@gmail.com

War veterans face multiple health problems, which are exceptional or more common in them than the ordinary population. Most of the time, these illnesses persist long after they have left the battlefield. Individuals returning from war zone have a number of health concerns, including physical problems and psychosocial problems, including the issues related to work and family. During Iraq war, one in ten Iraq veterans developed serious mental problems, including depression, alcohol abuse and violent behaviour. Post-traumatic stress disorder (PTSD) or depression was responsible for seriously impairing daily functioning in 8.5 % to 14 % of these veterans. Rare bacterial infections such as brucellosis persist for years and infection with Coxiella burnetii which in chronic cases can inflame the heart. Leishmaniasis, a particularly brutal condition veterans experienced in Middle East and those infected suffer, fevers, muscle pain, weakness, anaemia and enlargement of the spleen and liver on chronic basis. The long-term effect of harmful noise from gunfire, heavy weapons, noisy engine rooms and aircrafts prompt irreversible lower back pain or numbness. The unique health care needs of war veterans warrant addressing and fulfilling by a team of experts with knowledge and support of the community.

EVALUATION OF THE POSTGRADUATE EDUCATIONAL ENVIRONMENT IN KING ABDULAZIZ MEDICAL CITY - RIYADH
Abdulmalik Aloriney

King Abdulaziz Medical City, Riyadh, Saudi Arabia.
E-mail: aloriney@gmail.com

Background: There is growing medical interest and concern about educational environments and the effect they have on how trainee and post-graduate doctors learn as the clinical learning climate directly relates to the training doctor’s behaviour, motivation and success. An assessment of that environment would identify the relative strengths and weaknesses of the system of teaching and overall learning.

Objectives: The goal of the study was to evaluate the postgraduate training environment in King Abdulaziz Medical City - Riyadh from the trainee point of view, and to identify those strengths and weaknesses of the learning environment across different training levels, departments and importantly, between genders.

Methods: Postgraduate Health Educational Environment Measure (PHEEM) was selected to assess the teaching environment for 445 residents in active training at King Abdul-Aziz Medical City, Riyadh. The original PHEEM questionnaire was given in English.

Results: The result showed that the educational environment in general was more positive than negative with room for improvement in the total as well as all three subscales. The overall score was 97.52/160 for perception of autonomy; 32.67/56 for perceptions of teaching scale; and 38.93/60 for perceptions of social support. Junior doctors scored 25.92/44 overall, suggesting they perceived a significantly better learning climate in comparison with their senior colleagues whose total score was 102.2 vs. 92.77 (p value 0.021). The comparative results showed autonomy score 34.2 vs. 31.2 (p value 0.022); teaching score of 41.52 vs. 36.59 (p value 0.002), social support score of 27.58 vs. 24.23 (p value 0.002). Cronbach’s alpha overall score was 0.949.

Conclusion: Results of this study offer guidance to future improvement of the learning environment in health profession education at KAMC.

General Practitioners Knowledge, Attitude and Practice Regarding Vitamin D Supplementation to Infants in Dammam, Saudi Arabia: Does Educational Intervention Improve the Situation?

Afrah Ibrahim Babli, Kasim Mohammad Al Dawood, Ammar Hassan Khamis

Ministry of Health, Dammam, Saudi Arabia.
E-mail: dr.babli@gmail.com

Introduction: Vitamin D deficiency can be considered an epidemic in Saudi Arabia with high prevalence rate reported in the literature since the 1980s.

Objectives: To measure general practitioners’ knowledge and practice regarding vitamin D supplementation to infants. In addition, to conduct an educational intervention for doctors regarding Vitamin D, followed by evaluation of the success of this intervention by measuring the change in doctors’ knowledge and practice.

Methods: All general practitioners working in Dammam PHC were invited to attend an educational lecture regarding Vitamin D supplementation to infants, and the study questionnaires were given to them before the start of the lecture, and again four to six weeks after the lecture.

Results: Around one-third of GPs had excellent knowledge regarding vitamin D. 92% of them have a positive attitude towards vitamin D supplementation and 60% of them regularly prescribe vitamin D supplementation to infants. There was a significant difference between knowledge score before and after the educational lecture. There was no significant difference between practice score before and after the lecture.

Conclusion: Attending the educational lecture helped physicians to improve their knowledge; however, it did not lead to a significant change in practice.

The Validity and Reliability of an Arabic Version of the STOP-Bang Questionnaire for Identifying Obstructive Sleep Apnea

Ahmed S. BaHammam, Alaa M. Al-Aqeel, Alanoud A. Alhedyan, Ghaida I. Al-Obaid, Mashail M. Al-Owais, Awad H. Olaih

The University of Sleep Disorders Center, Department of Medicine, College of Medicine, National Plan for Science and Technology, King Saud University, Riyadh, Saudi Arabia.
E-mail: aq.alaa@hotmail.com

Background: Obstructive sleep apnea (OSA) is a common, serious, under-recognized and under-diagnosed medical disorder. Polysomnography (PSG) is the gold standard diagnostic test for OSA; however, the cost of testing and the shortage of sleep disorders laboratories limit access to this tool. Therefore, there is a need for a simple and reliable diagnostic tool to screen patients at risk of OSA.

Objective: This study was conducted to evaluate the validity and reliability of an Arabic version of the STOP-Bang questionnaire (SBQ) as a screening tool for OSA.

Methods: This study was conducted in three steps, as follows: Step 1: the SBQ was translated from English to Arabic (examining both forward and backward translations); Step 2: the test-retest reliability of the questionnaire was...
Patients do utilize the current written health care providers should contribute more in HE. Different materials in a positive way. More effort needs to be done as advices. More than 90% believe that written materials are effective for HE, but still want direct advice from health care providers.

Conclusion: The Arabic version of the SBQ is an easy-to-administer, simple, reliable and valid tool for the identification of OSA in the sleep disorders clinic setting.

PATIENTS’ UTILIZATION OF WRITTEN HEALTH EDUCATION MATERIALS

Alhan Haji, Mohammed Al-Ateeq
Department of Family Medicine & PHC King Abdul-Aziz Medical City (KAMC), Riyadh, Saudi Arabia.
E-mail: alhan.haji@yahoo.com

Background and objectives: Health education (HE) is one of the main components of primary health care (PHC). Written materials are considered one of the main methods for HE. This study was conducted to assess patients’ utilization of current written materials and to explore their opinion of how should a good quality material be.

Methodology: This cross-sectional study was conducted in three PHC centers at KAMC in Riyadh, SA. Data were collected through a self-administered questionnaire.

Results: 55% of participants usually get written HE materials from PHC waiting areas. The majority usually read one or more materials, remembered the information and found it helpful. Written materials brought change to 77% as they applied the written message. 25% read written materials regularly. Around 51% put the material back to its place after reading it. The preferred design of the written material is card that includes text and graphs and discusses healthy lifestyle as advices. More than 90% believe that written materials are effective for HE, but still want direct advice from health care providers.

Conclusion: Patients do utilize the current written materials in a positive way. More effort needs to be done to improve the quality of written HE materials. Different health care providers should contribute more in HE.

PREVALENT OF ANAEMIA AMONG PREGNANT WOMEN IN RIYADH

Ali Dakhel Al Ghamdi
Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: dakhilad@hotmail.com

Background: Anaemia in pregnancy is a major problem worldwide. Due to lack of information about the magnitude of anaemia in our institute, the objective of this study is to determine the prevalence of anaemia among pregnant women registered for antenatal care at Wazarat Health Center, Prince Sultan Medical Military City in Riyadh.

Methods: Data collected from a sample of antenatal records of all pregnant women registered for antenatal service. The design was cross-sectional study (record based). Sample size was 372 pregnant women. Cross-tabulation analysis of the data done by Chi-square test of various variables against haemoglobin concentration profile.

Results: Seventy-six (20.4%) were anaemic (haemoglobin level < 11 g/dl), of which, 12.6% mildly anaemic, 7.5% moderately anaemic and 0.3% severely anaemic. The prevalence of anaemia increased significantly with gestational age (P = 0.00). The age, parity and educational level did not affect the haemoglobin level of pregnant women (P > 0.05).

Conclusion: Although the prevalence of anaemia in this study is low compared to other studies in Saudi Arabia, anaemia is still a significant problem facing the pregnant women. So, it is recommended to increase efforts for health education of women in childbearing age regarding the importance of preconception care, and early detection and treatment before delivery.

KNOWLEDGE AND PRACTICE OF FOOT CARE AMONG DIABETIC PATIENTS ATTENDING DIABETIC CARE CENTER IN JEDDAH CITY, 2014

Fasial Suliman Al Gaows
Family Medicine, National Guard Hospital, Jeddah, Saudi Arabia.
E-mail: f_924@hotmail.com

Background: Diabetes mellitus (DM) is one of the common health problems affecting Saudi adults. One of the complications of DM leading to high mortality and morbidity and high cost is diabetic foot (DMF).

Aim: To provide a realistic view about the knowledge level and daily practice among diabetic patients about foot care.

Methods: This cross-sectional descriptive study was conducted in 308 diabetic patients attending diabetic care center in Jeddah city in June 2014 through interviewed questionnaire.

Results: Thirty-eight percent (38%) had good knowledge and 22% had good practice of diabetic foot care. With regard to knowledge, 85.4% were unaware of the
A cross-sectional study was conducted among physicians and nurses across five different primary health care centres related to King Abdulaziz Medical City (KAMC) in Riyadh, between the period of 23rd June and July 8th, 2014. The sample included 206 participants (physician n = 65; nurses n = 141), with a mean age of 42 ± 0.65. The response rate was 89%. A self-administered questionnaire using a 5 Likert Scale was randomly distributed among participants. The questionnaire included items adopted from previously validated questionnaires, while the content validity of the rest of the items was checked with a panel of experts (n = 14).

Results: Our results showed that 77% of participants rated themselves as updated with its activities. Seventy-four percent (74%) believed that they can rarely change the behaviour of patients with complications on the basis of their advice and 64% of participants expressed agreement that the language and cultural beliefs constitute obstacles in conducting an effective health promotion. Overall, the most preferred methods were counselling and printed educational materials (67%). However, the most used methods were the printed educational materials (81%), followed by counselling (56%) and campaigns (34%) (P < 0.01).

Conclusion: The attitudes of physicians and nurses towards health promotion practice were positive. Nevertheless, the majority demanded a mandatory health promotion related workshops and lectures.


PERCEPTIONS AND ATTITUDES OF SAUDI ADULT POPULATION TOWARD ORGAN DONATION; TAIF, K.S.A. 2012

Hanan Ali Al-Harthi
National Guard Hospital, Taif, Saudi Arabia.
E-mail: drhananali@hotmail.com

Background: Islam supports concepts of transplantation, which provide the strongest positive influence for organ donation both during life and at death. The Saudi Center of Organ Transplantation (SCOT) was established by the government of The Kingdom of Saudi Arabia (KSA) in 1984 as a national organ procurement center that supervises all activities of organ donation and transplantation in KSA. Despite the success of the Saudi programme, there have been public and medical obstacles that have obviated the full benefit of cadaver donors.

Objectives: To determine the public knowledge and attitudes toward organ donation, as well as to identify the factors that influence organ donation consent and refusal in KSA.

Subjects and methods: A cross-sectional study was carried out including Saudi adults who attended the outpatient clinics (OPD) in Prince Mansour Family and Community Hospital (PMFCH) in Taif city throughout the study period. A systematic sampling approach was adopted in the current work. The survey instrument is an Arabic language questionnaire designed to capture information relevant to the study. The questionnaire was filled in by the researcher through face-to-face interviews of the selected participants. The questionnaire is consisting socio-demographic information, questions to explore knowledge of the participants about organ donation and questions to assess participants’ attitudes regarding organ donation during the life and after death. To ensure the validity of the questionnaire, seven academic consultants reviewed it, then a pilot survey was conducted and modifications were done accordingly. The reliability of the questionnaire was conducted by re-testing 40 participants and an average coefficient of correlation of 0.94 has been obtained.

Results: The study included 400 Saudi adults. Their age ranged between 18 and 60 years and was normally
distributed with a mean of 32.68 ± 9.17 years. Most of them (72%) were males. The majority (85.8%) of the participants have heard of and were aware of the organ donation programmes. Almost two-thirds (62.4%) of the participants had their information about organ donation from the media, while 37.6% and 33.8% of them had their information from newspapers/magazines and Internet, respectively. Only 12% had their information regarding organ donation from healthcare workers. The knowledge score and attitudes toward organ donation increased gradually with increasing the participants’ educational level, being highest among university graduated and lowest among illiterate/primary educated participants. These differences were statistically significant (p = 0.001).

Almost (30.3%) of the respondents were willing to donate an organ, while 237 (59.3%) individuals refused organ donation. Fear of complications and lack of proper post-donation care were the main reported reasons for non-willingness of organ donation in 54.9% of participants. Insignificant information regarding organ donation, family refusal and the perception of being “against Islamic regulations” were reported by 32.9%, 28.7% and 12.7% of the respondents, who refused organ donation, respectively. Conclusions: Negative attitudes toward organ donation reported by this study are justified by the inadequate information acquired by the public about this significant issue. Religious beliefs are a major factor deterring many people from expressing a motivation to donate.

**EFFECT OF DIET AND EXERCISE IN PRE-DIABETES AND TYPE 2 DIABETES PEOPLE**

Khaiser Parvez  
Ministry of Health, Riyadh, Saudi Arabia.  
Email: khaiserparvez01

Type 2 diabetes is one of the most costly and burdensome chronic disease, which increasingly tends to be an epidemic problem throughout the world, (King, Aubert & Herman, 1998). Type 2 diabetes represents 90 percent of diabetes cases in Saudi Arabia. Usually, the disease is either resulted from a luxurious sedentary lifestyle, unhealthy dietary habits, lack of exercise and the prevalence of obesity. These key factors have resulted in diabetes becoming a silent killer. Diabetes is blamed for 41% of amputation cases in 2013 (April 5, Arab News). Half of Kingdom’s population will be diabetic by 2030 (April 3, Arab News). The aim of this review study is to make a comparative analysis between lifestyle modification with diet and physical activity and increased physical activities alone in prevention of type 2 diabetes. Research questions: (a) What is the role of lifestyle modification with diet and physical activity in prevention of type 2 diabetes? (b) Which intervention (among the above two) is effective in health promotion perspective? We have used database, Pubmed for article selection and found 11 articles in total with full text. Among them, five articles with lifestyle interventions used randomized controlled trials and six articles with physical activity alone were perspective studies. In conclusion, the reviewed five large randomized clinical trials have shown that lifestyle intervention with dietary changes and moderate physical activity significantly reduced the rate of conversion to diabetes among high risk groups than physical activity alone and it reduced the risk of future complication and reduces morbidity and mortality. It needs to be tested for clinical trials in healthcare system in the community and development of health promotional initiatives to prevent such conditions. The promise of achieving primary prevention of diabetes by lifestyle intervention should be consider as health policy issue. Further studies are needed in randomized clinical trials to find out the association with physical activity alone (leisure time activity) and lifestyle modification.

**BARRIERS FACING PRIMARY HEALTH CARE PHYSICIANS IN JEDDAH WHEN DEALING WITH EMERGENCY CASES 2013**

Majed Abdullah Aloufi  
Supervisor: Dr. Marwan A. Bakarman, Asst. Prof. & Consultant Family & Community Medicine, Rabigh Medical College, King Abdulaziz University.  
E-mail: majed_aloufi@hotmail.com

Background: Medical emergencies that arise in the PHC centres are a great source of concern for practitioners and PHC centres staff. Proper planning for the unexpected medical emergencies can help alleviate some of this anxiety and improve patient safety within PHC centres. Objectives: To estimate the prevalence of emergency cases reported to PHC centres, MOH, Jeddah as well as to explore the barriers primary care physicians face when dealing with such emergency cases. Subjects and methods: A cross-sectional descriptive study was adopted. All primary health care physicians who are working in the PHC centres of the Ministry of Health in Jeddah city at the period of the study were invited to participate (n = 247). Regarding centres, all PHCCs were included (n = 42). Data were collected through two sources; self-administered questionnaire. The second source was a structured observation sheet used to evaluate availability of equipments, drugs, ambulance and other supporting facilities needed to deal with emergency cases. Results: Out of 247 PHC physicians recruited for the study, 206 responded. Thus, the response rate was 83.4%. Majority of PHC physicians (83.5%) did not attend ATLS courses at all, whereas 60.7% never attended ACLS courses. Physicians in the age group (36 – 45) years (p value = 0.001), non-Saudi (p value =
Conclusion: The findings of this study at King Abdulaziz National Guard Hospital led us to conclude that the control of diabetes and adherence to health recommendations are suboptimal.

REFRACTIVE ERRORS AND THEIR ASSOCIATED RISK FACTORS AMONG MEDICAL AND NON-MEDICAL STUDENTS OF KING SAUD UNIVERSITY (KSU)

Mashael A. AlKhayyal, Alanoud K. AlHammad, Alanoud M. AIOMair, Dalal I. AlFayez, Dina S. AlMunif, Maysoon A. AlHaizan

King Saud University, Riyadh, Saudi Arabia.
E-mail: mashael.a.k@hotmail.com

Aim of the study: Medical students are known to have more near-work activities such as reading in comparison to non-medical students. This study is aimed to ascertain the association between near-work and developing refractive errors in addition to other risk factors. Preferred methods for correction were studied and adherence to guidelines for wearing contact lenses was assessed.

Study question: Are medical students having more refractive errors than non-medical students and do they adhere to guidelines more when using contact lenses?

Methods: An observational quantitative cross-sectional study that took place at the female Medicine and Business Colleges in KSU, Riyadh, Saudi Arabia. A well-structured electronic questionnaire was sent to all undergraduate female students in their third or fourth academic year (n = 384).

Results:
• Refractive errors were more common in medical students than non-medical students with percentages of (55.5%) and (44.5%) respectively.
• A strong association was found between developing refractive errors and spending long hours in front of computer screen.
• Non-medical students adhere more to guidelines for wearing contact lenses when compared to medical students.

Conclusion:
• A higher proportion of female students in KSU (55.4%) have refractive errors, in which medical students were more affected than non-medical students.
• Students who are at high risk (e.g. family history, exposed to near work) should be aware about the problem and start preventive measures early.
• Further studies are needed to find out why medical students take less care about their medical problems.

DIABETES MELLITUS CONTROL AND ITS RELATION TO FREQUENCY OF MONITORING HAEMOGLOBIN A1C, TYPE OF THERAPY, REGULAR ATTENDANCE TO CLINIC AT KING ABDULAZIZ NATIONAL GUARD HOSPITAL: RETROSPECTIVE STUDY

Mansoor AlNaim

Family Medicine Specialist, Family Medicine, King Abdulaziz National Guard Hospital, Al Hasa.
E-mail: spier-007@hotmail.com

Introduction: Diabetes mellitus is the most common chronic endocrine disorder and Saudi Arabia has one of the highest prevalence rates of diabetes in the world.

Objectives: To assess effect of adherence to therapy and follow-up health plans achieving diabetes control among diabetic people at King Abdulaziz National Guard Hospital.

Method: A retrospective study was conducted among diabetic patients attending outpatient clinic. Patients were identified through the hospital medical records, over a one-year period. The estimated population size around 2000 patients, and 322 patients were selected by a systematic sampling method. Medical charts were reviewed; the data were collected in a specially designed data sheet and entered in a computer and finally analyzed using an SPSS programme.

Results: The overall glycemic control as evaluated by HgA1C was acceptable in about 22.4% of the patients. The frequency of monitoring HgA1C level within one year was three times in the majority of patients. About 69.3% of patients had regular attendance to clinic and 87.6% had regular refill medication.
MAIN FACTORS ASSOCIATED WITH VITAMIN D DEFICIENCY AMONG PATIENTS ATTENDING WAZARAT PRIMARY HEALTH CENTER, PSMMC, KSA

M. Hakami, A. Afifi
Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: dr.hakami@hotmail.com

Background: Common factors associated with high vitamin D deficiency are important and been reported in several aspects. Since sun provides up to 90% of vitamin D comparing to nutrients, we focused on patient behaviour towards sun exposure.

Objective: Measure the behavioural and knowledge towards sun exposure and assess factors that prevent patient from sun exposure.

Methods: Self-administered questionnaires were distributed to patients who fulfill several criteria including low vitamin D level. We assess behaviour, practice and knowledge which may contribute to low vitamin D level in our clinic concentrated mainly on factors related to sun exposure.

Results: Of 179 participants, 98(55.7%) were males and 78(44.3%) were females. 63.6% patients expose to sun in early morning. 71% do not expose directly to sun. 87.7% expose hand and face only. We found many significant p-value for relationship between gender, age group and reasons not exposing to sun.

Conclusion: There was high responses that patient exposure to sun at times is not recommended and high responses show they are not directly exposed to sun (even car window prevent UVB). Also, we found female gender and younger age group avoid sun exposure to avoid sun-tanning. Others have concerns that sun exposure can cause skin malignancy. Also, we found most of the patients had the wrong idea about the best time for sun exposure and they are exposing only hands or face.

Recommendation: Since many patients in this study expose to sun early morning and late afternoon, we need to use media to educate our patients that sun exposure is approximately needed at times between 10 a.m. to 2 p.m. Only 10 minutes are needed and that would not harm the skin. Sun exposure must be direct and more body surface area exposed can lead to better results.

Keywords: Vitamin D deficiency, sun exposure, behavioural, practice, knowledge.

PHYSICAL ACTIVITY AND MAJOR NON-COMMUNICABLE DISEASES AMONG RIYADH PHYSICIANS DURING 1435H

A. Mandil, N. AlFurayh, M. AlJebreen, S. AlDukhi
College of Medicine, King Saud University, Saudi Arabia.

Introduction: Many studies were cited (nationally and internationally) on physical activity. Scarce data are available on physical activity levels among Saudi sub-population groups, especially physicians. There was also need for studies to test the possible association between physical activity and major non-communicable diseases (NCDs) in KSA.

Objectives: This study is aimed at assessing physical activity levels; estimating prevalence of major NCDs; investigating possible factors correlated with physical exercise and possible association between physical inactivity and major NCDs (cardiovascular diseases, diabetes, chronic respiratory diseases, cancer) among selected Riyadh physicians during 1435.

Materials and methods: A cross-sectional study was conducted on randomly selected 370 outpatient physicians, aged 24-65 years, of both genders, working at 4 healthcare delivery centers in Riyadh, KSA, namely: King Khalid University Hospital (KKUH), King Abdulaziz University Hospital (KAUH), King Faisal Specialist Hospital & Research Center (KFSH&RC) and National Guards Health Affairs (NGHA). The data were collected using a modified version of the WHO STEP-wise questionnaire.

Results and conclusions: About two-thirds of our sample of Riyadh physicians (63%) reported practicing physical exercise, which is higher than reports among the general Saudi population (32.4%). Moreover, more than one-fifth (21.9 %) of such physicians reported having one or more major NCD. Nevertheless, no statistically significant association was found in our study between physical inactivity and major NCDs among sampled physicians.

Keywords: Physical activity, physical inactivity, exercise, non-communicable diseases, cardiovascular diseases, diabetes, chronic respiratory diseases, breast cancer, colorectal cancer, physicians, Riyadh.

PREVALENCE OF DEPRESSION AMONG FAMILY CAREGIVERS OF HOMEBOUND PATIENTS ENROLLED IN HOME HEALTHCARE SERVICES AT THE ARMED FORCES HOSPITALS, TAIF, KSA, 2012

Oqab Al-Zahrany
National Guard Hospital, Taif, Saudi Arabia.
E-mail: dreaglez@hotmail.com

Background: Family caregiver of a homebound patient encounters a host of problems, including role overload, lack of information, financial strain, impaired quality of life, changes in health status, and emotional problems. Caregiver depression has been consistently associated with poor quality of life and other adverse outcomes.
Acne vulgaris is one of the most common skin disorders. Previous studies about the role of smoking in the pathogenesis of acne reported contradictory results. The aim of the study is to investigate the relationship between smoking and acne vulgaris in females.

**Objective:** The aim of this study was to estimate the prevalence of depression and identify associated risk factors among caregivers of homebound patients enrolled in home healthcare services at the Armed Forces Hospitals in Taif city.

**Methodology:** A cross-sectional approach was carried out among a representative random sample of family caregivers of homebound patients enrolled in home healthcare services at the Armed Forces Hospitals in Taif city. A self-administered or assisted administered questionnaire in Arabic language was utilized. The questionnaire included the following information: Sociodemographic information of the caregiver, type and duration of care and patient information. Beck depression scale (validated standardized Arabic version) was utilized to identify the severity of depression among caregivers.

**Results:** The study included 165 caregivers of homebound patients. Their age ranged between 23 and 60 years with a mean of 47.5 years and standard deviation of 13.9 years. More than one-half of them were females (53.9%). Depression, regardless of its severity, was recorded among 43% of caregivers. Depression was mild in 21.8% of them, moderate and severe in 16.4% and 4.8% of caregivers, respectively. Caregivers of the following characteristics showed more depression: females, low educated, having low income, closely related to patients (wife/daughter), serving more diseases patients with longer duration of the diseases as well as having social and medical problems. Only 17 caregivers (10.3%) gave a history of psychiatric consultation.

**Conclusions:** Depression is a highly prevalent disorder among family caregivers of homebound patients enrolled in home healthcare services at the Armed Forces Hospitals in Taif city. It is a complex clinical and social problem influenced in part by multiple patient and caregiver characteristics, such as age, level of education, gender, income, patient’s health problems, presence of housemaid as well as social and medical problems.

**ASSOCIATION BETWEEN SMOKING AND ACNE**

**Samer Ahmed Al Adwani**
Resident R4 FM, Imam Mohammed Ibn Saud University, Riyadh, Saudi Arabia.
E-mail: had.ban.2000@hotmail.com

**Background:** Acne vulgaris is one of the most common skin disorders. Previous studies about the role of smoking in the pathogenesis of acne reported contradictory results. The aim of the study is to investigate the relationship between smoking and acne vulgaris in females.

**Methods:** A case-control study was performed during the period January through June 2014. A questionnaire was administered to the patients at dermatology clinics, Riyadh, KSA. Controls were matched to the cases. The ratio of cases-controls was 1:1. Odds Ratio (OR) and the relative 95% confidence interval (95% CI) were assessed. The statistical significance was set at p < 0.05.

**Results:** 184 out of 512 included in the study (92 cases and 92 controls) with median age of 26 – 30 years.

**Conclusions:** The association between acne vulgaris and smoking in females shows decreased risk, statistically significant. The OR for the association of acne-smoke was 0.43 (0.23 – 0.8).

**RESIDENT DOCTORS’ KNOWLEDGE AND ATTITUDES TOWARD BIOSTATISTICS AND RESEARCH METHODS: SURVEY-BASED STUDY**

**Bahaa A. Aba Alkhail, Sami H. Alzahrani, Iman Kamal, Rahila Iftikhar**
Department of Family and Community Medicine, King Abdulaziz University Hospital, Jeddah, Saudi Arabia.
E-mail: drsamihz@gmail.com

**Objective:** The main objective of this study is to assess the knowledge and attitudes of junior physicians toward biostatistics and research methodology.

**Methods:** This cross-sectional study was conducted during the 2014-2015 academic year at King Abdulaziz University Hospital, Jeddah. A self–administered questionnaire was distributed to all participants. The questionnaire extracted demographic data, information about prior training in biostatistics and evidence-based medicine (EBM), and participants’ attitudes toward biostatistics and research methods. The data were analyzed using the Statistical Package for the Social Sciences.

**Results:** We recruited 162 physicians. Most participants were knowledgeable about basic concepts such as P values, study power, and case control study; over half were also confident that they could interpret results of scientific papers. Conversely, more than two-thirds of the respondents were unfamiliar with more sophisticated terms in biostatistics. General practitioners (P = 0.003), physicians in the academic setting (P = 0.02), and those who had previous training in evidence-based medicine (P = 0.05) were more likely to have better knowledge scores. Females (P = 0.003), physicians in the academic setting (P = 0.03), and those with prior training in biostatistics and epidemiology had a positive attitude toward biostatistics (P < 0.001 in both cases). Physicians who read medical journals scored lower in the biostatistics test than those who...
never read journals ($P = 0.001$).

**Conclusion:** Prior coursework in EBM and biostatistics as well as male gender were associated with knowledge scores. Training should be reinforced even after graduation from medical school.

**WILL ANY FUTURE INCREASE IN CIGARETTE PRICE REDUCE SMOKING IN SAUDI ARABIA?**

**Sara I. AlTraif, Omar A. Al-Mohrej, Hani M. Tamim¹, Hana Fakhoury², Ali Hajeer**

King Saud bin Abdulaziz University For Health Sciences, Riyadh, Saudi Arabia.

E-mail: altrayef038@ksau-hs.edu.sa

In Saudi Arabia, no studies have been reported on cigarette price increase and its effect on cigarette consumption. Our aim was to determine cigarette smoking prevalence in Saudi Arabia and to predict cigarette price increase effect on its consumption.

**Methods:** A cross-sectional study was conducted in April - May 2013. An Arabic questionnaire with demographic and socioeconomic data, smoking history, and personal opinion on price increase and cigarette consumption was distributed in public places and posted on famous Saudis media’s accounts.

**Results and discussion:**

- Among the 2057, 39% were current smokers, 92% of which were males, and 68% of them had a monthly income of ≥ 3,002 Saudi Riyals.

- 56% smokers stated that current pack prices are expensive (10 Saudi Riyals) and disagreed with price increase (adjusted OR = 0.33, 95% CI = 0.27 - 0.39, $P$-value < 0.0001).

- 55% smokers stated that a pack of ≥ 31 Saudi Riyals would make them quit.

- In Saudi Arabia, there were no reported cigarette price increase and no studies have investigated between cigarette price and consumption.

**Conclusion:** Increasing pack price to 31 Saudi Riyals is expected to lead to smoking cessation in 40% of Saudi smokers. Thus, we recommend Saudi authority to spread awareness and consider increasing cigarette prices.

**SCHOOL BULLYING AND ITS ASSOCIATED ILLNESSES IN PRIMARY SCHOOLS IN AL-KHOBAR CITY**

**Sarah Al-Arifi¹, Samah Al-Khaldi¹, Mohammed El-Gezery²**

¹Family Medicine Residents, Department of Family Medicine,
²Assistant Professor of Community Medicine, King Fahd Military Medical Complex, Dhahran, Saudi Arabia.

E-mail: sarahalarifi@yahoo.com

Background: Bullying in schools is a worldwide problem; it is an issue that is silently growing in Saudi Arabia.

**Purpose:** To estimate the prevalence of bullying among Saudi school children and to determine its association with mental health disorders, mainly anxiety and anti-social behaviour.

**Methods:** A cross-sectional study was conducted on 232 primary school students. The sample included 118 girls and 114 boys from Al-Khobar city. Students were interviewed to assess for bullying and its association with anxiety. Teachers filled up questionnaires to assess for anti-social behaviour.

**Results:** More than one-half (56.9%) of primary school children were subjected to various forms of bullying, 43.9% of boys and 56.1% of girls were victimized at school. Boys and girls were subjected to physical (34.2%) and verbal (37.3%) bullying respectively. The prevalence of bullied students was higher among those living in an unstable environment (78.95%) than those living in a stable environment (46.15%). Victims had a higher percentage of mild-to-moderate (9.8%) and moderate-to-severe anxiety (3.8%) compared to non-bullied students (2.0% and 1.0% respectively).

**Conclusion:** The high prevalence of bullying in schools and the significant association with anxiety demands more awareness at schools and at homes about this issue.

**THE DECLINE IN AGE AT MENARCHE AND ITS ASSOCIATION WITH BODY MASS INDEX IN SAUDI ARABIA**

**Mona Foudah, Sarah Alsukait, Rotana Hashim, Sarah Farhoud, Ghelia Alabdulkader, Haifa Alsudairy, Leena Alshaman**

King Saud University Riyadh, Saudi Arabia.

E-mail: salsukait@gmail.com

**Objectives:** To investigate the mean age at menarche in girls aged 9-16 in Riyadh, and its relationship with body mass index and other covariates.

**Methods:** A cross-sectional of 364 students in private and governmental schools in Riyadh, March 2013. Data were collected using self-administered questionnaires distributed to students and their mothers. Physical examinations were conducted for anthropometric measurements.

**Results:**

- 304 students were included, with a mean age (SD) of 12.52(2.08), 54.3% of whom attained menarche.

- Students’ mean menarcheal age (SD) was 12.08(1.28).

- Mothers’ age at menarche was positively correlated with their daughters ($r = 0.411$, $P < 0.001$).

- No significant correlation between BMI and age at menarche was found ($P > 0.05$).
A significant difference was present between the mean age at menarche (SD) in governmental and private school students, 12.34(1.19) and 11.59(1.3) years, respectively (P < 0.001).

Conclusion: The mean age at menarche among present-day students in Riyadh was found to be lower than previously indicated in literature. This declining trend suggests that modifiable factors should be monitored and taken into account in strategies that aim to combat the consequences of early menarche.

PATIENTS’ ATTITUDE AND PREFERENCE TOWARDS MEDICAL STUDENTS’ INVOLVEMENT IN THEIR HEALTH CARE IN TABUK REGION IN SAUDI ARABIA

M. Alshwameen, S. Almutairi, M. Albalawi, F.A. Shaman

Supervised by: Dr Amani Shaman, Faculty of Medicine, Tabuk University, Kingdom of Saudi Arabia.
E-mail: sarah1412@windowslive.com

Introduction: Medical students are the future health professionals. To fulfill this role, they should be involved in patient care during their training years.

Objective: To explore patient’s attitude towards the involvement of students in their health care.

Methods: A cross-sectional descriptive study was conducted from April through August 2014 at KKH in Tabuk Region, Saudi Arabia. Participants were randomly selected from outpatient clinics and inpatient. Data analysis was done using SPSS.

Results: Three-hundred and three (303) participants, 238(78.5%) were selected from outpatient clinic (group Ι) (45.8%), OB-GYN clinic (39.1%) and Surgery clinic (15.1%). From inpatient wards (group Π) 65(21.5%) participants were recruited 40% from surgical ward, 35.4% from Medical ward and 24.6% from OB-GYN ward. One hundred and thirty (130) participants (43.3%) in group Ι and 23 (35.4%) in group Π report positive attitude regarding presence of students during consultation. However, that was not the case regarding the presence of students during examination 54 participants (38(16%) group Ι, and 19 (29%.2) group Π).

Conclusion: The results demonstrate that participants have positive attitude towards female medical students’ involvement in their health care. However, being a male medical student can pose a challenge to develop a required clinical skill since most of participants refuse their involvement in their health care.

AWARENESS OF PATIENT RIGHTS AND RESPONSIBILITIES AMONG PATIENTS ATTENDING OUTPATIENT CLINICS TAIF, SAUDI ARABIA

Sultan Abdullah Almalki
National Guard Hospital, Taif, Saudi Arabia.

Background and objectives: Little is known about the implementation of the patient rights and responsibilities in Saudi Arabia. Therefore, this study was conducted to determine the level of awareness of patients attending outpatients at Military Hospitals in Taif city, Saudi Arabia, regarding patient rights and responsibilities, obstacles affecting their awareness and source of information.

Design and setting: A cross-sectional survey included a representative sample of patients attending outpatient clinics of the five hospitals of Armed Forces Hospitals, Taif region during December 2013.

Patients and methods: The study employed a self-administered questionnaire to collect data from 364 patients out of 420 invited to participate in the study (aged 18 - 60 years).

Results: More than half of patients (58%) were aware of the existence of patients’ rights document. Among them, only 37% reported reading of this document. Only 15.9% had insufficient or poor knowledge regarding their rights. Regarding patients’ responsibilities, more than one-third of the patients had excellent knowledge (37.1%). Only 11.8% of them had insufficient or poor knowledge.

Conclusions: A considerable percentage of patients lack necessary knowledge about the bill. Knowledge was better regarding responsibilities than rights. Their source of information was mainly announcement hospital board. Their knowledge was influenced by their education, being aware of and read the patients’ bill of rights.

MEDICINE

SOLITARY RECTAL ULCER SYNDROME: A SINGLE CENTER CASE

Abdulaziz Alghulayqah, Fahad Alsohaibani, Ehab Abufarhaneh, Hadeel Almanea

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: dr.3bdal3ziz@gmail.com

Background: Solitary Rectal Ulcer Syndrome (SRUS) is an uncommon benign and chronic defecation disorder with a wide variety of presentation, endoscopic as well as histopathological features.

Methods: This is a retrospective study of all patients diagnosed with SRUS at King Faisal Specialist Hospital and Research Centre in Riyadh from January 2003 to December 2013 through the Department of Pathology database. The medical records, paper and electronic,
were reviewed to evaluate clinical manifestation, endoscopic findings and histopathological features. **Result:** During these ten years, 20 patients were included. The mean age was 49 years for female and 34 years for male with the age range: 14 – 72, with a slightly female predominance of 55%. The mean BMI was 27.95. Central region of Kingdom of Saudi Arabia had most of the cases, 65%. Co-morbidity accounted in 80% of the patients such as diabetes mellitus and hypertension with 30% and 25% respectively. The most common risk factor is at 75% then history of at 30% and rectal prolapse at 20%. Most of the patients presented with bleeding per rectum (85%), followed by constipation (75%) and strain (50%). The mean duration of the symptoms is 26.7 months. Endoscopic findings of these patients include ulcer, either single 50% or multiple 30%, and more commonly 55% had polypoidal appearance, rectal wall involvement in up to 45%. 94.12% had surface ulceration, 70.59% having fibrosis of the lamina propria and 64.7% with distorted architecture/crowdening. Muscle hypertrophy and increase in the mucin production were found in 58.8%. Serrated crypts were seen 17.6%. All the patients were treated with conservative management; no one had surgery. All were treated with stool softener/high fiber diet. 20% treated with mesalamine, either oral or suppository according to the site of the lesion, 10% received additional budesonide foam and 15% of persistent cases went for biofeedback. **Conclusion:** SRUS is an uncommon benign defecation disorder with variable clinical presentation, not necessary to be single ulcer on endoscopy, it could be multiple or sometimes with only polyps. Surface ulceration, distorted architecture as well as fibrosis of the lamina propria are common features. Conservative management is the mainstay of treatment.

**HEREDITARY ANGIOEDEMA (HAE) IN SAUDI POPULATION**

Abdulhadi M. Al-Qahtani, Farrukh Sheikh, Agha M. Rehan Khaliq, Rand K.H. Arnaout, Sulaiman Al-Gazlan

Section of Allergy & Immunology, Department of Medicine, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

E-mail: dr.abdulhadi@outlook.com

**Background/Purpose:** Hereditary angioedema (HAE) is a rare but potentially fatal disease. It is characterized by episodic isolated angioedema. The epidemiologic data on this disease is scant. Some groups from around the world are continuing to report the clinical features in their populations. These clinical features of HAE might vary from one population to another. To our knowledge, this is the first study reporting the clinical presentation of HAE in Saudi Arabia.

**Methodology:** This is a retrospective study of 50 patients with hereditary angioedema at KFSHRC. The diagnosis and management of HAE was based on internationally accepted guidelines (e.g. WAO). We analyzed the following clinical features; current age, age at first attack and at diagnosis, gender, number, severity and types/locations of attacks and hospitalizations before referral and during the last year. Types of therapy were also analyzed. **Results:** 50 patients were included, 36.36% were men and 63.64% were women. In the 12-month period, the mean number of HAE attacks was 13. Among the reported attacks, the mean number of HAE attacks were abdominal (11), peripheral (8), upper airway (4) and facial (7). The mean number of severe events during the patient’s life in relation to HAE attacks included: Laryngeal oedema (0.2), abdominal surgery (0), intubation or tracheotomy (0.1) and hospitalization (1.9).

**Conclusion:** Patients with HAE in Saudi Arabia had a large number of attacks per year; some of them can be fatal unless the awareness of this disease is raised among the medical community and the public.

**FATAL ARDS WITH MYCOBACTERIUM TUBERCULOSIS AS COMMUNITY ACQUIRED PNEUMONIA**

Ebrahim Mahmoud, Salim Baharoon, Hamdan Al-Jahdali, Hani Tamim, Eiman Alsafi

King Faisal Specialist Hospital & Research Centre Riyadh, Saudi Arabia.

Email: cardio424@hotmail.com

**Background and objective:** Tuberculosis (TB) is the seventh leading cause of death in the world. Acute respiratory failure and ARDS are rare presentation of tuberculosis. We present a single center experience with this presentations of tuberculosis.

**Methods:** Retrospective reviews of all cases with CAP admitted to ICU in a tertiary care hospital from 2003 to 2013 where a respiratory culture result grew MTB.

**Result:** Eleven cases with pulmonary TB fulfilling criteria of ARDS. The mean age was 51.9 with 6 males and 5 females. The median time to TB diagnosis was 7 days while median time for treatment from onset of symptoms was 18.14 days. Seven patients died giving crude mortality of 64%. Their median hospital stay before death is 21.4 days. Clinical suspicion of tuberculosis as a cause of CAP was present in 6 patients. ARDS developed in two patients after starting anti-TB medications.

**Conclusion:** Pulmonary tuberculosis can infrequently present acutely to intensive care as ARDS. It should be considered early as a differential diagnosis, especially for patients coming from endemic areas. Empiric treatment should be considered early as this presentation carries a high mortality. Late treatments, high APPACH II at presentation are independent risk factors for death.
MITOCHONDRIAL NEUROGASTROINTESTINAL ENCEPHALOMYOPATHY TREATED WITH STEM CELL TRANSPLANTATION

Musthafa Chalikandy Peedikayil, Eje Ingvar Kagevi, Ehab Abufarhaneh, Moeenaldeen Dia Alsayed, Hazzaa Abdulla Alzahrani

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: dr.ehab.abudagga@hotmail.com

Mitochondrial neurogastrointestinal encephalomyopathy (MNGIE) is a rare autosomal recessive disorder. The mutation in the ECGF1 gene causes severe deficiency of thymidine phosphorylase (TP), which in turn increases thymidine and deoxyuridine in the blood, serum and tissue. The toxic levels of these products cause malfunction of the mitochondrial respiratory chain and mitochondrial DNA. Commonly, patients become symptomatic between 15 and 20 years of age (range: 5 months to 35 years). The most commonly affected systems are gastrointestinal, followed by ocular and nervous system. The disease is often fatal; high mortality rate is reported between 20 and 40 years of age. Treatment modalities that can increase thymidine phosphorylase activity and decrease thymidine and deoxyuridine have shown symptomatic improvements in patients with MNGIE. Platelet transfusion, haemodialysis, peritoneal dialysis or allogeneic haematopoietic stem cell transplantation (HSCT) have been tried. The survival and long-term benefits of these measures are still not clear. Engrafted patients after stem cell transplantation have shown improvements in serum thymidine and deoxyuridine. We are reporting a case of MNGIE from Saudi Arabia, who underwent allogeneic haematopoietic stem cell transplantation.

A REPORT OF ARTERIOVENOUS ACCESS CREATED IN THE ARM WITH IPSILATERAL CENTRAL VENOUS OCCLUSIVE DISEASE IN HAEMODIALYSIS PATIENTS – CASE SERIES

Fahad Alobaid Mohammed Mahdi Althaf, Ghassan AlAbsi, Safa Mansour AlSaffar, Osman I. AlFurayh, Naveed Haq

King Faisal Specialist Hospital and Research Center, Riyadh, KSA.
E-mail: dr.f.alobaid@gmail.com

Central venous occlusive disease (CVOD) is common in haemodialysis (HD) patients; most often secondary to prior central venous catheterization. CVOD usually impedes creation of arterio-venous (AV) fistula in the ipsilateral arm. We report outcomes of new approach in a case series of HD patients with CVOD in addition to multiple exhausted sites of AV access. These patients underwent AV access creation in the ipsilateral arm as a last resort.

A retrospective analysis of patients with this clinical scenario who had AV access surgery between Jan 2008 to Dec 2013. We report the success of this surgery, postoperative symptoms and complications as well as the duration of patency. Fifteen (15) patients (M: F, 7:9, 51.8 years) were reviewed. All patients had radiographically confirmed bilateral CVOD and were asymptomatic. 16 procedures were done in 15 patients. 7 were AV fistulas and 8 were AV grafts. All patients (100%) were symptomatic...
LEVEL OF GLYCEMIC CONTROL AND BARRIERS OF GOOD COMPLIANCE AMONG DIABETIC PATIENTS IN AL-MADINA, KINGDOM OF SAUDI ARABIA

Ghaida Abdulrahman Jabri, Mahmoud AbouGamel, Esra’a Al-Moghamsi, AhmadAl-Gabbyan, Abdulrahman Alsharif, Yasser Alshabi, Reham Al-Rehaili, Rakan Abu-Game, Arwa Hodhir
Taibah University, Madina Al-Munawara, Saudi Arabia.
E-mail: ghaid2@hotmail.com

Background: Diabetes mellitus (DM) is an important health problem, which necessitates long-term follow-up and control.
Aim: This study is designed to determine the level of glycemic control among diabetic patients in Al-Madina and to explore which type of DM shows better glycemic control. In addition, we aim to define barriers of good compliance in diabetic patients who have an HbA1c test of 7% or more.

Subjects and methods: A cross-sectional analytic study was conducted and included diabetic patients participated in the campaign (Your Health is Your Life II) held in Al-Madina. Data were collected by administering a questionnaire and measuring glycosylated haemoglobin (HbA1c), blood pressure, weight and height for all participants.

Results: Among 164 participants, only 24.4% achieved the recommended goal of HbA1c level (< 7%). Higher percentage of achieving this goal is observed among type 2 diabetics (26.2%) than type 1 (10.5%). Higher educational level, being on diet prescribed by physician or dietitian, duration of DM less than 5 years and visits of diabetic clinic within the past 3 months were associated with better HbA1c level while age above 50 and treatment with both (insulin + pills) or insulin alone were associated with lower level of control. Forgetfulness was the barrier in more than one-half of patients with HbA1c of 7% or more while fear of insulin injection is the only factor which showed statistically significant difference between males and females.

Conclusion: High percentage of patients did not attain the recommended target of HbA1c level (< 7%). This may indicate the presence of a gap between recommendations of the international guidelines and the actual practices. Regular clinic visits and higher educational level of the patients may contribute to better glycemic control.
ASSESSMENT OF MULTIPLE SCLEROSIS AWARENESS AND KNOWLEDGE AMONG SAUDI POPULATION IN RIYADH, SAUDI ARABIA

Hend Al Hudaif, Nada Albwardi, Suleiman Kojan
Faculty of Medicine and Health Sciences, King Saud bin Abdul-Aziz University for Health Sciences, Kingdom of Saudi Arabia.
E-mail: hhudhaif@gmail.com

Introduction: Multiple sclerosis (MS) is the most common autoimmune disease affecting the central nervous system (CNS). The estimated prevalence of MS around the world is 30 per 100,000. Prevalence of MS in Saudi Arabia has not been determined; however, researchers suggest an increase in incidence and prevalence in the Middle East. A lack of knowledge about the disease symptoms may cause patients to present late and miss the opportunity to reap the benefits of early intervention.

Objective: To evaluate the awareness, knowledge and sources of the information on MS among the Saudi population in Riyadh City.

Methodology: A community-based cross-sectional study conducted in Riyadh, Saudi Arabia. Saudis aged 18 years and above were included and all health professionals/students and subjects diagnosed with MS were excluded. A structured questionnaire including 15 questions on awareness, knowledge and sources of knowledge on MS was administered by an interview using convenient stratified quota sampling. A sample size of 246 was sought.

Results: A total of 246 subjects were interviewed in 22 settings. Less than one-third of respondents (30.3%) reported being aware of MS. Knowledge was assessed using 15 questions and a ‘knowledge score’ was calculated from 100%. Mean knowledge score was low (M-24%, F-32%) with no significant difference in knowledge between M/F, age groups or educational levels. Subjects who knew someone diagnosed with MS had significantly higher scores of 37.0% (p = 0.001). The most frequent source of knowledge of subjects was ‘learning from people around them’ with a significantly higher mean knowledge score of 34.7% (p = 0.009).

Conclusion: Multiple sclerosis awareness and knowledge is suboptimal in this sample of Saudi population. Our sample reliance on knowledge from people around them may indicate a lack of available information via the internet or television on MS. We recommend the use of public awareness campaigns through various media.

Acknowledgments: Fay Al Dossari for helping in the data collection.

ELEVATED SERUM VITAMIN B12 LEVEL AND CEREBELLAR SIGNS; A POSSIBLE ASSOCIATION - CASE REPORT

Hessah A. Al Hussaini¹; Mohammed Sultan²
¹Department of Internal Medicine, ²Department of Pharmacy, National Guard Health Affairs, Al-Ahsa.
E-mail: alhusainihe@ngha.med.sa/hessah.alhussaini@gmail.com

Background: Elevated vitamin B12 level has been reported to be associated with lymphoproliferative disorders, haematological malignancies, etc. It was not reported in literature about its association with neurological dysfunction.

Objective: To propose an association between elevated vitamin B12 level and neurological signs.

Case description: A 60-year-old lady, with diabetes mellitus, hypertension and chronic kidney disease developed cerebellar signs (ataxia, bilateral horizontal nystagmus, impaired finger-to-nose and rapid alternating movements on right side and impaired heal-to-shin movements on left side) after 2-day use of vitamin B12 subcutaneous injections (Mecobalamin 1000 µg/mL OD). Computed tomography (CT) brain showed no infarction or haemorrhage. Serum vitamin B12 level was 4289 pmol/L (baseline level 365 pmol/L in 2010). The patient recovered within 2 days of stopping injections.

Discussion: Clinical presentation and course are strongly associated with vitamin B12 intake and discontinuation, respectively. Elevated serum vitamin B12 level (secondary to supplement) may be attributed to decreased renal excretion secondary to renal impairment.

Conclusion: Neurological dysfunction, specifically cerebellar signs, may be a new manifestation of elevated vitamin B12 level. Vitamin B12 level should probably be checked in all patients, especially with renal impairment, before injectable supplements are offered.

EVALUATION OF THE ONLINE ARABIC MEDICAL INFORMATION FOR DIABETIC PATIENTS

Huda F. Al-Dossari, Dr. Khalid Al-Yahya
Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: alhuda2003@yahoo.com

Background: The Internet has become a source of drug information for patients with diabetes and healthcare professionals alike. However, the accuracy of information found online may not always be trustworthy and concerns have been raised about the quality of information that may be found, by patients, on the Internet.
**Study aim:** The aim of this study is to evaluate the usability, content, and reliability of available online Arabic drug information for diabetic patients.

**Methods:** Web search for drugs used in treatment of diabetes mellitus either by oral or injection based on Google and Yahoo. We defined and evaluated three major categories for each site: usability, content and reliability. Usability is defined by design, ease of navigation, interactivity and internal search capability. Content was based on the quality of drug information including generic and trade name, indications, dosing, adverse effects, contraindication, precautions, drug interactions, mechanism of action, pharmacokinetics, monitoring and storage. Reliability was defined by the presence of the HON code, identification of an author and the availability of experts.

**Results:** While evaluating the usability of these Arabic websites, we find that 45% (layout), 83% (clarity of language), 17% (logical organization), 95% (ease of access), 57% (internal search capability), and 57% (presence of feedback mechanism) met the criteria. Furthermore, approximately 94% (generic name), 74% (trade name), 80% (indication), 20% (dosing), 50% (adverse effect), 25% (contraindication), 25% (precaution), 20% (drug interaction), 67% (MOA), 12% (pharmacokinetics), 12% (monitoring), and 26% (storage) have correcting information. In addition, approximately 36% (author identification), 13% (expert available), and 18% (HON code logo) indicated that few sites met the criteria for reliability.

**Conclusion:** Despite the large numbers of publicly available websites for anti-diabetic drugs, only a few met criteria for quality.

**Keywords:** Diabetes mellitus, Oral hypoglycemia, Insulin and new anti-diabetic treatment.

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**IDENTIFICATION OF A NOVEL HOMOZYGOUS CEP290 GENE MUTATION IN AL AHSA FAMILY CAUSING JOUBERT SYNDROME**

Elbadri Abdelgader, Lulwah Al Turki, Muthana Al Sahlawi, Khamees Khamis, Omer Adam Omer, Wasim Ahmed

King Abdulaziz Hospital for National Guard Health Affairs, Al-Ahassa, Saudi Arabia.
E-mail: dr.lily-2@hotmail.com

**Background:** Joubert syndrome (JS) is a rare autosomal recessive inherited disorder. The phenotypic presentation is heterogeneous and includes neurological, ocular, skeletal and renal abnormalities. These syndromes share a complex MRI pathognomonic brainstem malformation referred to as the ‘molar tooth sign’ (MTS).

Recently, more than ten genes associated with JS have been identified.

**Objectives:** A 19-year-old patient with dysarthria and ataxia was referred with significant renal impairment; two siblings had similar presentation with MRI showing a JS characteristic brainstem malformation. The objective of the study was to determine possible common genetic basis to their disorder.

**Methods:** Patient genomic material was analyzed for known mutations in NPHP1 gene (chromosome 2q13) and Next Generation Sequencing (NGS) was performed for all reported JS genes.

**Results:** Initial analysis uncovered no mutation in NPHP1 gene. However, NGS identified a novel c.5704G>T mutation in Exon 41 of the CEP290 gene (chromosome 12q21). To the best of our knowledge, this mutation has not previously been described. The exchange of G to T leads to a premature stop-codon at position 1902 of the protein (p.Glu1902*), resulting in degradation of the mRNA or truncation of CEP290 protein. Her sister was confirmed to have the same mutation.

**Conclusions:** The identification of a novel CEP290 mutation is compatible with the diagnosis of JS. This mutation can be regarded as pathogenic. The results allowed for appropriate genetic counseling. We recommend inclusion of this gene target in future diagnostic panels.

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**GASTROINTESTINAL BASIDIODOLOMYCOSIS**

Mashail AlHajiri, Marwan J.AlWazzeh, Mona Ismail, Mariam M. AlQurashi, Khalifa AlMulhim, Tareq ElSharkawy, Abdelhaleem Bella

King Fahad Hospital of the University, University of Dammam, Saudi Arabia.
E-mail: mmzqf@hotmail.com

**Introduction:** Basidiobolus ranarum is a known cause of subcutaneous zygomycosis, but rarely have gastrointestinal manifestations been described. Gastrointestinal basidiobolomycosis poses diagnostic difficulties; its clinical presentation is nonspecific, there are no identifiable risk factors, and all age groups are susceptible. This report presents a case of this disease in a Saudi male involving the gastrointestinal tract. He was treated with hemicolectomy followed by oral voriconazole, with a successful outcome.

**Case:** A 19-year old male presented with abdominal pain of 2 months’ duration associated with diarrhoea and subjective weight loss. On examination, he was afebrile, and his abdomen was soft but particularly tender at the right iliac fossa where a palpable, firm mass (5 x 5 cm) was located. Computerized tomography scan of the abdomen showed irregular circumferential
wall thickness and mucosal enhancement of the cecum and ascending colon till hepatic flexure with multiple enlarged necrotic pericolic lymph nodes. Barium enema showed an apple core like circumferential focal stricture in the right colonic flexure measuring 5 cm. Colonoscopy revealed two masses, semicircular cecal mass with necrotic ulcer and a polypoid ascending colon mass. Biopsies were taken and histopathology revealed active eosinophilic colitis and negative AFB culture. A repeated CT scan showed progressive involvement of the ileum with the involvement of the left colon with submucosal oedema, which signifies acute inflammatory process. The patient had laparotomy with a right hemicolecotomy. Histopathology of the resected specimen showed suppurrative granulomata with many multinucleated giant cells, engulfing septated irregularly wide fungal hyphae surrounded by radiating annular amorphous eosinophilic deposit (Splendore-Hoeppli phenomenon), which is suggestive of basidiobolomycosis.

Discussion: Gastrointestinal basidiobolomycosis is a recently recognized disease, which leads to diagnostic confusion, morbidity and mortality. It requires high index of suspicion. The authors review the literature after presenting clinical-radiological and pathological features of this condition.

Keywords: Basidiobolomycosis, Basidiobolus ranarum.

**PANCREATITIS IN THE EASTERN REGION OF SAUDI ARABIA: 10 YEARS’ REVIEW FROM KING FAHAD HOSPITAL OF THE UNIVERSITY, DAMMAM**

Mashail AlHajiri, Dimah Al Askar, Mais Al Sardi, Ryan Al Hejles, Sultana Abulghan, Raed AlSulaiman, Abdelaziz Al Quorain and Abdelhaleem Bella

King Fahad Hospital of the University, University of Dammam. Saudi Arabia.

E-mail: mm2qf@hotmail.com

**Introduction:** The epidemiology and outcome of acute pancreatitis (AP) may differ in the populations studied. There were two large studies about AP in Saudi Arabia (KSA) from Gizan and Riyadh Military complex with some similarities but differences from the reported aetiology in the West. The authors describe the epidemiology and outcome of AP in King Fahad Hospital of the University, Dammam, in the period from 2004 - 2014.

**Methods and Results:** This is a retrospective study based on the medical records review of patients admitted as AP to King Fahad Hospital of the University in the period from 2004 - 2014. The analysis included 122 patients with 70 males (57%) and 52 females (43%). The age was 42.7 +/-16 years. The majority were Saudis (76) and Egyptians (13) and the rest were other nationalities. The commonest symptoms were abdominal pain (95%), vomiting (75%) and 86% had epigastric tenderness on examination. Twenty-nine percent had jaundice on admission. When assessing the aetiology: 59% had gallstones and 11 had been taking alcohol. One third of the patients received antibiotics during admission: Tazocin in 56% and metronidazole in 40%. Five patients were admitted to ICU.

**Discussion and conclusion:** Acute pancreatitis is commonly caused by gallstone disease in Saudi Arabia although there are other risk factors, e.g., alcohol. The authors present their local data and compare it with the two epidemiological data from Gizan and Riyadh Medical complex to assess for similarities and differences. The low morbidity and mortality in our cohort may reflect the early recognition of the disease and hence better management.

**Keywords:** Pancreatitis, Saudi Arabia.

**LEVEL OF CONTROL AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS ATTENDING DIABETIC CLINIC UNDER FAMILY MEDICINE COMPARED TO DIABETIC CLINIC UNDER ENDOCRINOLOGY AT KING ABDUL-AZIZ MEDICAL CITY - RIYADH**

Mohammed Alhabdan, Mohammed Al-Ateeq, Faisal Al-Jurbua, Ahmed Al-Olah

College of Medicine, King Saud Bin Abdulaziz University for Health Sciences.

E-mail: m-a-h22@hotmail.com/habdan026@ksau-hs.edu.sa

**Objectives:**
- To assess level of control of type 2 diabetic patients attending Diabetic Center at King Abdul-Aziz Housing Family Medicine Clinics and patients attending diabetic clinics at Ambulatory Care Clinics, King Abdul-Aziz Medical City, National Guard, Riyadh.
- To compare the level of control of diabetic patients in both groups.
- To explore the effect of different variables on the level of control in both groups.

**Methods:**
- Retrospective cross-sectional study by reviewing diabetic patients' medical records and lab study from Hospital Information System.
- Using predesigned sheet for data collection.
- The data collection sheet consists of 3 parts: part one for personal and demographic data, part 2 for diabetes data and part 3 for glycemic control data.

**Results:**
- Among 352 patients, 176(50%) patients were from the family medicine setting and 176(50%) patients were from the hospital setting.
- The mean HA1c for the whole study population was 8.97 + 1.87.
- There was no significant difference between the two groups in regard to level of control (9.01 + 1.75 in...
the family medicine setting compared to 8.93 + 1.98 in the hospital setting).

- No significant correlation was found between level of control and age, duration of disease and number of followup in both settings.

**Conclusion:**

- Patients with type 2 diabetes mellitus in this study were found to be poorly controlled in both settings, diabetic clinic under Family Medicine and diabetic clinic under Endocrinology.
- No difference in the level of control between the two settings.
- Further steps to be taken toward improvement of diabetic patient care at diabetic clinic under Family Medicine, which is more accessible, more convenient to patients and more cost effective.

**PREVALENCE OF GASTROESOPHAGEAL REFUX IN MAKKAH**

M. Binhussein, M. Khan, A. Alamoudi, M. Alghafis, A. Bajawi, M. Baz, T. Bazuhair, R. Alsayed, R. Baksh, B. Bukhari, K. Almatrafi

King Abdullah Medical City, Makkah, Saudi Arabia.

E-mail: dr_amjad84@yahoo.com

Gastroesophageal reflux disease (GERD) is a common health problem worldwide. In the western population, represented by the United States of America (USA), the prevalence is around 20%. However, in eastern population, mainly China, the figure is much less with estimated prevalence of 5.2%. The only study that looked at the prevalence of GERD in the Kingdom of Saudi Arabia (KSA) quoted that it exceeds 45% in the central region of KAS, Riyadh, which is a very high prevalence compared to worldwide data (ranges from 10% up to 33%). Hence, the aim of this study is to confirm whether the result would be similar in the Western region of KSA, Makkah.

**Method:** Using a validated questionnaire (GerdQ) with a cut-off of 8 or more to diagnose GERD, a randomly selected general population of the city of Makkah was approached. Apart from GerdQ questionnaire, details of demographic data, age, gender, height, weight, smoking habits (hookah and/or cigarette), comorbidities (lung diseases, heart disease, diabetes, or hypertension) and non-steroidal anti-inflammatory drug (NSAID) use were obtained.

**Results:** Of 1423 participants who consented to fill the questionnaire, 425 were excluded due to incomplete answers and the remaining 998 were included in the final analysis. The male to female ratio was 1:2 (322:668), mean age was 29.9 years and the mean BMI was 25.5 kg/m². 76.53% (763) scored less than 8 on the GerdQ questionnaire giving a prevalence of GERD of 23.47% (234) based on GerdQ questionnaire. There was a statistically significant association between obesity and presence of GERD (p = < 0.01). Participants who had DM and HTN were more likely to score greater or equal to 8 on GerdQ (42.02% and 53.12% respectively) compared to those without DM or HTN (22.09 and 21.43% respectively).

**Conclusion:** In our cohort of participants from the Western region of KSA, the prevalence of GERD was 23.47%. This result was similar to other reported literature worldwide.

**PROSPECTIVE TRIAL IN SAUDI ARABIA COMPARING THE 14-DAY STANDARD TRIPLE THERAPY WITH THE 10-DAY SEQUENTIAL THERAPY FOR TREATMENT OF HELICOBACTER PYLORI INFECTION**

Fahad Alsohaibani, Hamad Alashghar, Muhammed Khan

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

E-mail: stronghold222@gmail.com

**Background/Aims:** Treatment success for *Helicobacter pylori* infection in Saudi Arabia is relatively unexplored. This prospective study compared the efficacy of sequential versus standard triple therapy in curing *H. pylori* infections.

**Patients and methods:** Eligible patients underwent upper endoscopy at a single center in Saudi Arabia from October 2011 to February 2014. Patients who tested positive for *H. pylori* infection were randomly assigned to sequential therapy or standard triple therapy. Sequential treatment: Esomeprazole (20 mg b.i.d. for 10 days), amoxicillin (1000 mg for 5 days), then clarithromycin 500 mg and tinidazole 500 mg; both b.i.d. for 5 days. Standard triple treatment: Esomeprazole 20 mg, clarithromycin 500 mg, and amoxicillin 1000 mg each b.i.d. for 14 days. After 6 weeks of treatment, patients were tested for cure using a validated urea breath test. Application of the E-test determined susceptibility of *H. pylori* to different antibiotics.

**Results:** Of the 115 patients who received sequential therapy, 93 completed treatment. In the triple-therapy arm, 103 of 117 patients completed treatment. The eradication rate was 58/93 (62.3%) with sequential therapy and 69/102 (67.6%) with standard triple therapy, *P* = 0.44. The risk ratio was 0.92 (95% CI: 0.75 - 1.13), and the number needed to treat was 19. Overall primary resistance: Metronidazole (48.5%), clarithromycin (23.3%), amoxicillin (14.8%), levofloxacin (11.1%), and tetracycline (2.3%). Mild adverse events occurred in 35 and 17 patients in the sequential and standard therapy groups, respectively.

**Conclusion:** Sequential and standard triple therapies were similarly effective in eradicating *H. pylori* in
two-thirds of Saudi patients. Metronidazol and clarithromycin resistance to *H. pylori* strains was common.

**OUTCOME OF SORAFENIB TREATMENT IN ADVANCED HCC: SINGLE CENTER EXPERIENCE**

Mushabbab Asseri1, Ali Albenmousa2, Nasser Almasri2, Eman Al-Obari2

1Medicine Department, 2Gastrology and Hepatology Department, Prince Sultan Medical Military City, Riyadh, Saudi Arabia.

E-mail: mk-student@hotmail.com

**Background:** Management of advanced hepatocellular carcinoma (HCC) is still a challenge to physicians since these patients are not candidates for surgical or ablative therapy. The disease carries a very poor prognosis with an expected survival period of 4 - 6 months. Till recently, no chemotherapeutic agent has been proven to improve the clinical outcome in such patients. A multikinase inhibitor, sorafenib, has emerged as the only effective treatment with significant improvement of clinical outcome in patients with advanced HCC based on two large randomized clinical trials. Sorafenib exerts its action through inhibition of several kinases involved in both tumour cell proliferation and angiogenesis. It was well tolerated at a dose of 400 mg twice daily.

**Aims:** To assess the efficacy and safety of sorafenib in the treatment of advanced HCC outside clinical trials.

**Materials and methods:** A retrospective chart review of patients with advanced HCC treated with sorafenib in a single tertiary centre in Riyadh between June 2008 and April 2013 was carried out. Patients were included if they were prescribed sorafenib and had at least one followup after starting treatment. Demographic, clinical, biochemical and radiological data were collected. Primary endpoint was the overall survival. Side effects were recorded whenever available together with radiological response.

**Results:** A total of 63 patients were included in the analysis. Males were 50 patients (79.4%) and the mean age was 65.5 ± 9.9 yrs. Fifty percent of patients were diabetic and 58 patients (92%) were cirrhotic. HBV infection was the primary cause of liver disease in 24 patients (38.1%) while HCV was the cause in 21 patients (33.3%). Distant metastasis was found in 14 patients (22.2%) and lymph node enlargement in 16 patients (25.4%). Twenty-eight patients (45.4%) had previous procedures, RFA (18.8%) and TACE (23.4%). Forty-two (42) patients had Child A score at the start of treatment, 17 were Child B and 4 had Child C disease. The median overall survival was 10.3 months. Death was censored in 16 patients (30.7) but 24 patients had lost followup. Side effects were reported in 15 patients and the commonest were diarrhoea and skin rash. The medication was stopped prematurely in 3 patients.

**Conclusions:** Efficacy of sorafenib in treating advanced HCC in this cohort was very similar to phase III clinical trials; however, missing followup was a major limitation and hence this might have underestimated the survival benefit of the treatment.

**MEDICAL STEP-DOWN QUALITY IMPROVEMENT AND RESEARCH STUDY**

Wasim Ahmed, Muthana Al Sahlawi, Hani Mustafa, Ali Al Qarni, Mohammad Kashif Anis, Deborah Lee, Shantal Sharon Pienaar, Alam Mohammad Mashroor Wahid, Maram Al Subaei, Shafiq Sadiq

King Abdulaziz Medical City for National Guard, Al-Ahassa, Saudi Arabia.

Email: sahlawim@ngha.med.sa

**Background:** Over the past years, the step-down units at KAMC have been providing care to critically ill patients since 2008. There have been no data regarding patients’ baseline demographics, quality indicators and their monitoring. Therefore, there was a need to develop quality indicators, monitor them prospectively on a continuous basis, observe outcomes, and to compare them with international standards.

**Methods:** Quantitative and descriptive study design was adapted. An online database was created. We developed a data set including demographic data and quality indicators.

**Results:**

- From 1st Jan 2013 to 31st December 13, a total of 598 patients were admitted to medical step-downs. Top diagnoses were sepsis, AKI and CHF.
- The majority of those patients were admitted directly from ER. Average length of stay was 1 - 3 days.
- The rate of DVT prophylaxis form activation improved from 40% to 80%, with peptic ulcer prophylaxis and physician’s daily pain assessment being improved from 80% to 95% and from 60% to 90% respectively.

**Conclusions:** Throughout the first year of the study, significant improvements were seen in number of quality indicators; however, there were areas where further improvement is needed.

**PULMONARY HYPERTENSION: DEMOGRAPHICS, CLINICAL CHARACTERISTICS AND OUTCOME AMONG HOSPITALIZED PATIENTS**

Nada Al Amri, Nahid Sherbini

King Fahad Hospital, Madina Al-Munawara, Saudi Arabia.

E-mail: dr.dew2020@hotmail.com
**Background:** Pulmonary hypertension (PHT) is a fatal disease, but the epidemiological data still limited. Transthoracic echocardiography is a reliable non-invasive screening test for evaluation of PHT according to current guidelines.

**Objective:** We aimed to measure prevalence of PHT among hospitalized patients and describe PHT groups.

**Method:** We retrospectively reviewed patients with PASP > 40 and TRV > 2.8 m/s. Patients’ data were statistically analyzed and correlated to outcome.

**Result:**
- We included 769 patients with PHT between January 2013 and December 2014 at a single tertiary hospital in Saudi Arabia.
- The mean age was 60.52 ± 18 years, 408 were women (53.1%) and 361 men (46.9%).
- EF 55 ± 14, PASP 50 ± 14 mmHg.
- The prevalence for all forms of PHT is 9.26%.
- Group 2 (Heart disease) represents the commonest cause 284 (36.9%), then Group 3 (Lung Disease) 190 (24.7%), Group 5 (other) 150(19.5%), Group 4 (CTEPH) 88 (11.4%), Group 1 (PAH) 53(6.9%).
- Overall mortality is 132(17.2%). Group 2 had statistically significant results for worst outcome in 58(44.3%).

**Conclusion:** Heart disease was the most common cause and had the worst prognosis. Female sex was predominant, outcome worse in male. Our findings may highlight burden of PHT.

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**FOIX-ALAJOUANINE SYNDROME: REPORT OF A CASE WITH SPINAL CORD HAEMORRHAGE INDUCED BY NORMAL VAGINAL DELIVERY**

A. Bruce Janati¹, Naif Saad ALGhasab², Afnan Mohammed Altamimi³, Amani Fahad Al-Thawiny⁴, Fazal Haq⁵

¹Neurologist at Center for Neurology in Fairfax Virginia, USA (MD), ²Hail University, King Faisal Hospital, Riyadh, ³Fifth year medical student at King Saud University, Riyadh ,KS (MD), ⁴Fifth year medical student at King Saud University, Riyadh ,KSA (MD), ⁵Medical resident at King Khaled Hospital, Hail,KSA (MD), King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

E-mail: Naifalghasab@gmail.com

**Introduction:** Foix and Alajouanine first described the syndrome in 2 young men in 1926. It was thought to be a subacute myelopathy produced by a thrombotic process of the spinal cord that ultimately caused death.

**Methods:** This study was conducted at KKH with the utilization of MRI.

**Results:** All patients (35) with SSW had documented epilepsy, presenting clinically with partial or generalized epilepsy. It is noteworthy that one-third of the patients and abrupt onset of compressive myelopathy.

**Conclusion:** In this paper, we report, for the first time, the occurrence of intramedullary haemorrhage in a patient with Foix-Alajouanine syndrome who had a normal vaginal delivery. Our data mitigate probably against NVD in patients with spinal arteriovenous malformation.

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**RARE PRESENTATION OF COLORECTAL CANCER**

Naif Saad Al Ghasab, Mohammad Alharbi, Fahad Alobaid,

Fahad Alsuhibani, Mohammad Alabdulwahaab, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

E-mail: Naifalghasab@gmail.com

**Abstract**

Thigh pain is a rare presenting complaint for colon malignancy. Broad differential diagnosis will be developed for those patients. At the bottom of your differential diagnosis list will be malignancy, either primary or secondary. However, initial presentation would be necrotizing fasciitis in some conditions. Our case presented with pain and pus coming from his right thigh. We describe the case and discuss the aetiology of colorectal cancer in such patients. We then review the literature and discuss the investigation and management of such presentation.

**Keywords:** Colorectal Cancer, Metastasis, Fistula, Necrotizing fasciitis

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**SHARP SLOW WAVES IN THE ELECTROENCEPHALOGRAM: A RARE VARIETY**

Bruce Janati, Naif Saad Alghasab

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

E-mail: Naifalghasab@gmail.com

**Introduction:** There is a paucity of data in the EEG literature on the characteristics of “atypical” interictal epileptiform discharges (IED) including sharp slow waves (SSW). In this paper, we will address for the first time the clinical, neurophysiological and neuropathological significance of this pattern.

**Methods:** This investigation was conducted on a heterogeneous group of patients at KKH, a tertiary-care facility in Riyadh, KSA (cohort study of 1300 patients). Our data revealed that SSW’s were rare and age-related EEG events occurring primarily in the first two decades of life.

**Results:** Our data, for the first time, document objectively the risk of normal vaginal delivery in patients with FAS because of a possibility of haemorrhagic transformation
with SSW had chronic or static CNS pathology, particularly congenital CNS anomalies. Even though more than one mechanism may be involved in the pathogenesis of SSW, we believe a deeply-seated cortical pacemaker as the source of this EEG pattern to be the most compelling theory.

**Conclusion:** The presence of SSW should alert clinicians of the possibility of an underlying chronic or static CNS pathology, in particular congenital CNS anomalies, underscoring the significance of neuroimaging in the workup of this population.

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**PHYLODIES TUMOUR OF THE BREAST: A CLINICOPATHOLOGICAL ANALYSIS AND OUTCOME, SINGLE CENTER EXPERIENCE**

Nouf Hamid¹, Maha Abulhammed², Munir Al Refae³
Department of Internal Medicine, Department of General Surgery, King Fahd Hospital of the University, Dammam University.
E-mail: dr.nouf.k.h@hotmail.com

**Purpose:** The purpose of this study is to present our experience with phyllodes tumours (PTs) from clinicopathologic prospective and their outcome.

**Method:** Searching the database of phyllodes tumour was done to retrieve our sample population. In addition, search was conducted using the pathological diagnosis using the SNOMEDIII. Another attempt with the same search strategy was done using term of breast sarcoma. Up to this date, 1/4/14; we succeeded to retrieved 9 patients. In addition to the age, other demographic variables, all imaging, pathological material, treatment options and outcomes were reviewed for the purpose of the study.

**Keywords:** Phyllodes tumours, clinicopathologic factors, fibroadenoma, breast sarcoma.

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**A RARE CASE OF BILATERAL BENIGN ANDROGEN-PRODUCING LARGE ADRENOCORTICAL ADENOMAS**

Abdulaziz Alwosaibei, Wadei Elhakimi, Salim Bawazer, Jamal Alsaeed, Mohammed Alqambar, Mohamed Elsammak, Abduljaleel, Poovathamkadavi Mammunji, Mohammad M. Yousef
Internal Medicine, Endocrinology Section, King Fahd Specialist Hospital, Dammam, Saudi Arabia.
E-mail: dr.salimsaloom@gmail.com

**Background:** Virilizing tumours of the adrenal gland are very rare, accounting for 5% - 6% of all adrenal tumours. Among them, adrenal carcinomas are more common than benign adenomas.

**Clinical case:** A 42-year-old lady presented with a 10-year history of progressive virilizing symptoms. Baseline tests were consistent with hyperandrogenism of adrenal source: A total testosterone of 6.62 nmol/L (n 0.3 - 3.78), free androgen index 27.8% (n: 0.5 -7.3%), DHEA-S 14.22 mΜol/L (n 1. 5- 7.7). An abdomen CT scan showed bilateral adrenal tumours, right side measured 6 x 3 cm, heterogeneous with Hounsfield units (HU) of 27 and 60% washout within 10 minutes. Left adrenal mass measured 3.5 x 3.5 cm with HU 30 and 60% washout within 10 minutes. The patient underwent a laparoscopic right adrenalectomy based on the size and imaging phenotype. The pathology revealed a 4 cm well-circumscribed adrenal adenoma with no pathological evidence of malignancy. Postoperatively, there was significant improvement of hyperandrogenism and patient conceived three months later; however, post delivery she had recurrence of hyperandrogenism clinically and biochemically and followup CT scan imaging showed the left adrenal mass having increased in size to (4.3 x 3.5 cm) from (3.5 x 3.5 cm). Patient underwent laparoscopic left adrenalectomy and pathology revealed a 6 cm adrenal adenoma with no evidence of malignant potentials. Postoperatively, she has been maintained on steroid replacement and remains disease-free after two years of followup.

**Conclusion:** We report a rare case of benign bilateral virilizing large adrenal tumours in a premenopausal woman.

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**TIME-COURSE OF HYPERALGESIA IN THE RAT CHRONIC CONSTRICTION INJURY MODEL OF NEUROPATHIC PAIN**

College of Medicine, King Faisal University, Al-Ahassa, Saudi Arabia.
E-mail: wissam-bpl@hotmail.com

**Introduction:** Patients with insults to the somatosensory system may suffer from the most debilitating pain with presence of sharp and burning neuropathic pain that is largely resistant to treatment. This pain is spontaneous in most patients, but may manifest as both hyperalgesia and/or allodynia.

**Objective:** The aim of the current research was to investigate changes in the latency of paw withdrawal to noxious heat stimuli after nerve injury.

**Material and method:** The experiment was done in 6 rats. Chronic Constriction Injury (CCI) was performed on 3 rats and the other 3 rats were subjected to sham operation to measure the changes of withdrawal heat latencies of ipsilateral paw before and after the operation.
Result: The results show that sham rats did not develop hyperalgesia but in CCI rats there was a significant decrease in the heat latencies between baseline and day eight. Over the rest of time points, the mean of different latency started to increase, indicating recovery. Also, there was some variability in both groups.

Conclusion: These changes in the time-course of hyperalgesia may be related to immune cell activation and cytokine production at different time-points.

Acknowledgements: Dr. Karima Kahlat for supervising this project.

EFFECT OF DIFLUOROMETHYLORNITHINE AND METHOTREXATE ON PROLIFERATION IN HUMAN BREAST CARCINOMA CELLS

Almani, Z. AbdulQayyum Saud
Imam Muhammad Bin Saud Islamic University, Kingdom of Saudi Arabia, Summer School in the Cancer Center, University of Arizona, United States.
E-mail: a_Q_m.80@hotmail.com

Introduction: In human colon cancer cells, the combination of difluoromethylornithine (DFMO) and methotrexate (MTX) has been determined to inhibit cellular proliferation.

Objectives: My hypothesis: If the combination of DFMO and MTX inhibited proliferation in colon cancer cells, then does this drug combination have the same effect in human breast cancer cells?

Materials and methods: Sterile cell culture techniques including harvesting and sub-culturing were used in performing these experiments, human breast carcinoma cells were treated alone and in combination with DFMO and MTX for 72 hours. Vehicle control for MTX was dimethylsulfoxide at equivalent concentration.

Results: Cell viability was inhibited with DFMO and MTX treatment alone; however, the combination treatment had no inhibitory effect.

Conclusions: In human breast carcinoma cells, DFMO and MTX each inhibited cell growth approximately 35% compared to untreated cells; however, combination of DFMO and MTX resulted in no inhibition of cell growth. This drug combination is antagonistic and does not seem to be beneficial for therapeutic use. Other drug agents could be tested in combination to indicate inhibition of proliferation.

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Keywords: Colon cancer, breast cancer, difluoromethylornithine (DFMO), methotrexate (MTX).

SINGLE CENTRE EXPERIENCE OF ADOLESCENT AND YOUNG ADULT (AYA) FANCONI ANAEMIA AND HAEMATOPOIETIC STEM CELL TRANSPLANT (HSCT)

A. Alhuaiji, M. Aljurf, S.A. Osman
King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: aalhuaiji@gmail.com

Background: Fanconi anaemia (FA) is an inherited disorder that is associated with congenital anomalies, bone marrow failure and an increased risk of cancer. Haematopoietic stem cell transplantation (HSCT) is a modality that is potentially curative for the bone marrow failure that these patients have. Here we report our Centre’s experience of HSCT in adolescent and young adult (AYA) patients with FA, a cohort of patients who are older and more likely to be heavily pre-treated than the majority of patients in reported series.

Method and material: We carried out a retrospective analysis of patients’ data from medical records and electronic systems from 1988-2012. We included patients with confirmed FA based on positive chromosome breakage study who underwent stem cell transplant at our institution age ≥ 14.

Results: A total of 12 patients with FA underwent HSCT. The median age was 17.7 years (range: 14 – 26 years) with female predominance of 75%. Two patients had dysplasia on the bone marrow with abnormal cytogenetics. Prior to HSCT, all patients were transfusion dependent; median ferritin level of 10 patients was 3500 ng/L (range: 134 - 6998 ng/L). Five patients (41%) received prior steroids (n = 3) and/or androgens (n = 3). One patient received prior ATG and cyclosporine. Conditioning included TBI in 5 patients (41%). ATG was included in the conditioning regime in 10 patients (83%). Eleven patients (91%) received a graft from an HLA identical donor; stem cell source was bone marrow in 83.3% cases. Four patients (33%) died, all before day +100 of HSCT without evidence of engraftment. The causes of mortality were related, such as infection, acute respiratory distress syndrome (ARDS) or grade IV graft versus host disease (GVHD). At a median followup of 47 months (range: 5 - 245) for surviving patients (67%), all the latter patients engrafted and remained transfusion independent. Two surviving patients developed aGVHD ≥ grade II. One patient developed chronic GVHD.

Conclusion: Our findings support the feasibility of allogeneic HSCT in older and more heavily pre-treated patients with FA. Patients who engrafted had excellent long-term outcomes. The prevalent risk of early transplant-related mortality (TRM) highlights the need for optimization of pre-and peri-transplant supportive care and measures to reduce the risk of graft failure. Further studies of HSCT in AYA and older patients are warranted.
VIRAL HEPATITIS B AND C IN HIV PATIENTS, SAUDI ARABIA
Ahmad Alhuraiji, Ali Alaraj, Saad Alghamdi, Abdulla Alrbaian, Abdulrahman Alrajhi

King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: aalhuraiji@gmail.com

Background and objectives: Hepatitis B and C are among the leading causes of death in human immunodeficiency virus (HIV)-infected patients. Prevalence data on viral hepatitis B and C in HIV-infected people in the region of Middle East and North Africa are scarce. We report the prevalence of viral hepatitis B and C in HIV-infected patients in Saudi Arabia.

Design and settings: Data on all HIV patients who attended HIV Programme at King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia, were kept longitudinally. For the purpose of this report, patients enrolled in the programme between January 1985 and December 2010, were included.

Methods: Data on all HIV patients who received HIV care at age 18 and older between January 1985 and December 2010 were collected. Data were collected from patients’ charts at our medical records department and electronically from the electronic health records and HIV database. We excluded patients who were deceased prior to completing workup, lost followup, or acquired HIV perinatally.

Results: Among 341 HIV-infected patients, hepatitis C infection was found in 41 (12%) patients. The commonest risk factor for hepatitis C virus and HIV acquisition was blood/blood product transfusion in 24 (60%) patients; of these 21 (88%) were haemophiliacs, followed by heterosexual transmission in 9 (22%) patients. The commonest genotype was genotype 1 observed in 18 patients (44%), out them 6 had moderate SOS; fungal infection 7(37%); bacterial infection 6(31.5%); CMV reactivation 3(16%) and haemorrhagic cystitis 1(5%). No case of idiopathic pneumonia syndrome reported. The median ANC recovery was 17(12 - 48) days. Transplant-related mortality at day +100 is 5%. Event-free survival is 63% with mean survival time 7.2 months and overall survival is 58% with mean duration of followup 8.2 months.

Conclusion: Our study showed potential benefit of BuMel as a conditioning in HRNB treatment. However, we observe high incidence of SOS. Further large scale multi-center study is needed.

IMPACT OF DIET MODIFICATION ON SERUM FERRITIN LEVEL IN THALASSEmia CHILDREN
Ghaida Abdulrahman Jabri, Abdulaziz Abdullah Alhosaini, Saud Ahmed Sultan, Khulood Yahya Fallatah

Taibah University, Madina Al-Munawara, Saudi Arabia.
E-mail: ghaid2@hotmail.com

Background and aim: Blood transfusion is the main treatment for people who have moderate or severe thalassemia. The main side-effect of transfusion therapy is that the patient develops iron overload, which leads to serious damage to the internal organs. Many foods can play an important role in decreasing iron absorption from the intestine and that could improve the prognosis of these patients. The aim of our study is to detect the effect of diet adjustment in thalassemia children, to a more iron-excreting and less iron-absorption diet, on their level of serum ferritin.

Patients and methods: In a randomized case-control study, 36 thalassemia patients presented to the hematology/oncology center at the Maternity and
Children Hospital (MCH) in Almadinah Almounourah, KSA, in the period from January 2014 through July 2014. They were observed prospectively for their serum ferritin level. The cases were asked to follow a diet that limits iron absorption and increases iron excretion.

**Results:** Serum ferritin level significantly decreased in cases after 6 months of diet iron restriction more than in controls (p value = 0.03).

**Conclusions:** Restriction of foods that contain iron and increase intake of foods that excrete iron from body can significantly decrease the serum ferritin level in thalassemia children.

**Recommendations:** According to our results, control of diet and following food regimens that can minimize iron absorption and maximize iron excretion are of great benefit for thalassemia children and can act as an adjuvant for drug chelation therapy.

**HAEMATOPOIETIC CELL TRANSPLANTATION INDEX (HCT-CI) PREDICTS 5 YEARS OVERALL SURVIVAL AMONG PATIENTS DIAGNOSED WITH HEMATOLOGICAL MALIGNANCIES IN NATIONAL GUARD HEALTH AFFAIRS, RIYADH**

Naila A. Shaheen, Sultan Abdullah, Hussam Ali Anazi, Mohsen Al Zahrani, Mohamed A. Hussein, Ahmed Al Askar

University of Hail, Hail, Saudi Arabia.
E-mail: husam08@windowslive.com

**Introduction:** Survival outcomes are affected by existing co-morbidities, among patients with haematological malignancies. HCT-CI, a haematology specific index predicts survival. The objective of the study is to determine relationship between the 5-year overall survival and HCT-CI score.

A retrospective cohort study of 149 patients diagnosed with haematological cancer during 2006 - 2008 was conducted after receiving ethical approval. Patients were followed up for 5 years. The data included demographics, diagnosis, co-morbidities, management and outcomes. HCT-CI score was calculated for each subject, and was stratified into 3 groups (0, 1 - 2, ≥ 3).

**Results:** Average age was 51.05 ± 22.317 years. More than half (51.68%) of patients were diagnosed with lymphoma. Of the 149 subjects, 21.5% had HCT-CI score 0, 47.0% had score (1 - 2), and 31.5% had score ≥3. Patients with HCT-CI score ≥ 3 had low 5-year survival compared to subjects score (1 - 2)/(0) score (P < 0.0001). Subjects with HCT-CI score ≥ 3 had median survival time 38 months. HCT-CI score remained a statistically significant predictor of death within 5 years after controlling for age, gender with predictive power of C = 0.761 (< 0.0001).

**Conclusion:** HCT-CI Score predicts 5-year survival among patients diagnosed with haematological malignancies.

**A VIEW ON NEEDLESTICK AND SHARPS INJURY**

Jumana Sarraj, Haya Azouz, Shouq Kherallah, Alaa AlDalati, Khulood Kuhail, Seham Abdulkader

Al-Faisal University, Riyadh, Saudi Arabia.
E-mail: jsarraj@alfaisal.edu

**Background:** Health care workers’ environment is one of the most vulnerable ones due to stress, work complexity, infectious diseases and sharp instruments. All employees in healthcare settings handling needles or other sharps are at risk of being injured. NSSIs (needlestick and sharps injuries) have been recognized as one of the most serious occupational hazards among healthcare workers (HCWs). World Health Organization (WHO) estimated that out of 35 million HCWs worldwide, approximately 2 million experienced percutaneous injuries each year. Of those injured, 70,000 were likely to be infected with HBV, 15,000 with HCV and 500 with HIV. Globally, the incidence of NSSI among HCW increased due to low safety measures such as recapping needles and improper disposal of needles.

**Objective:** The objective of this review paper is to provide an extensive review of the most recent literature about needle stick injuries, their impact on health care workers, along with an insight into the most recent preventive and managing options.

**Methodology:** A meticulous review of 81 articles from 2002 to 2014 was conducted. Most of these studies were executed in United States, Saudi Arabia, Germany, Finland, Nigeria and Egypt. Articles were retrieved from PubMed, ScienceDirect, EBSCO, Biomed Central and ClinicalKey with the following keywords: needlestick injuries, blood, occupational hazards and health care.

**Results:** Extensive review of the literature revealed that NSSIs have detrimental effects on health care settings due to its effect not only on healthcare workers but also on the annual expenditure of the hospital. Majority of NSSIs have occurred after use and before disposal of the needle specifically during recapping of the needle, which suggests the importance of better implementation of standardized guidelines about needle disposal. Nurses are the most affected health care professionals.

**Conclusion:** Due to the wide prevalence of NSSIs across the healthcare systems in different countries, protocols are being constantly reformed to provide effective protection against NSSIs. For instance, the WHO recommends immunization for diseases likely to be transmitted in NSSIs like HBV, HCV, HIV, implementation of methods that will aid in exposure control like hand hygiene and better
Background/Purpose: The Janus kinase 2 (JAK2) p.V617F gain-of-function mutation is the hallmark of BCR-ABL1-negative myeloproliferative neoplasms (MPNs). This study was conducted to catalog JAK2 mutations in 1811 patients tested between 2010 and 2013.

Methodology: We sequenced exons 12–15 of JAK2 in 1706 samples and further evaluated patients with mutations.

Results: Of 271 (16%) JAK2-mutant patients, 148 (54.6%) were females, while 123 (45.4%) were males; 103 (38%) were local, while 168 (62%) were referred, and 13 (5%) had additional genetic abnormalities. The median patient age was 54 years, and there was only one paediatric patient. In agreement with previous reports, 96.7% of patients (262) were positive for the JAK2 p.V617F mutation. Non-p.V617F JAK2 mutations were detected in the remaining nine (3.3%) patients; five (1.8%) had a p.G571S mutation, and one (0.3%) each had a p.E543_D544del mutation, a p.Y570Y silent mutation, a p.R541_E543delinsK mutation, and a p.I540_N542delinsM mutation. Diagnosis of 103 (38%) in-house cases revealed a predominance of MPN patients (87, or 84.4% of cases).

Conclusion: JAK2 p.V617F was the most prevalent mutation detected among our patients. Non-p.V617F JAK2 mutations were identified in exons 12 and 13; these corresponded with recently reported mutations, except for the novel p.I540_N542delinsM mutation.

E-mail: nahlah.sg@gmail.com

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Disparities in breast cancer by race/ethnicity among economically disadvantaged women

S. Al-Tamimi1, G. Al-Shaman2

1Arizona Department of Health, USA; 2Al-Imam Muhammad Ibn Saud Islamic University (IMSIU), Kingdom of Saudi Arabia.

E-mail: Altamimi.44@gmail.com

Introduction: It has always been thought that race influences health outcomes due to the genetic factor. However, others have debated that external modifiable factors such as socioeconomic status is the key to racial/ethnic disparities in breast cancer.

Objectives: The purpose of this study is to analyze the disparities in breast cancer (age at diagnosis, stage and type) by race and ethnicity among economically disadvantaged women in Arizona.

Materials and methods: A cross-sectional study was conducted using combined data collected by Well Women Health Check Breast Cancer and Screening...
Programme (WWHP) in Arizona linked with the Arizona Central Cancer Registry (ACR) during the period between 1966 and July 2014. Study subjects included were breast cancer patients (n = 1151) from five different race/ethnic groups with income levels ranging between 133 and 250 percent of the Federal Poverty Level. The population was divided into 5 different race/ethnicity categories: White Non-Hispanic and Hispanic, Black Non-Hispanic, American Indian/Alaska Native, Asian/Pacific Islander. The first two race/ethnic groups constituted the majority.

**Results:** The sample shows a wide distribution of range of age at diagnosis across race/ethnicity (24 to 89 years of age) especially among Whites and Hispanics. The median age at diagnosis was 53 in almost all race/ethnic groups. Among all races, the most common type of breast cancer was invasive cancer (= 81%). Ductal carcinoma in situ (DCIS) was the commonest type among each group except for White non-Hispanic, whereby it was the least observed (~34%). Generally, the early stage was found more than late stage among all races (= 35%).

**Conclusions:** Disparities between race/ethnic groups were found. However, similarities were more prominent suggesting the strong influence of economical status on breast cancer in terms of type and age at diagnosis. Regardless of race/ethnicity, economically disadvantaged women were more likely to have breast cancer 8 years earlier than the general population.

**BACTERIAL CONJUNCTIVITIS AMONG CHILDREN IN KHARTOUM TEACHING HOSPITAL**

Soha Ahmed Ali  
E-mail: queen21101@gmail.com

Bacterial conjunctivitis is common and affects all age groups. The pattern of bacterial conjunctivitis was studied among children who presented at the Al-Khartoum Teaching Hospital, Khartoum State, Sudan. Eye swab was taken from all children who presented with eye discharge to the Eye Clinic of the Al-Khartoum Teaching Hospital from January to February 2013. The aim of this study was conducted in order to assess the prevalence and antimicrobial susceptibility testing of different bacterial eye infections during childhood age, with symptoms including irritated both eyes with a sticky discharge or crusting on the eyelashes. Fifty eye swab samples were collected from children with age groups between 1 - 10 years with the mean age group 5.5 years. All of them had at least one symptom or sign of bacterial conjunctivitis. The total number and percentage of specimens that gave significant growth was 31(62%) while 19(38%) specimens gave no growth of the cases, as a causal agent of symptomatic bacterial conjunctivitis. The most common microorganisms seen were S.aureus (44%), Coagulase negative Staphylococcus (10%) and S.pneumoniae (15%). There was not any case of H.influenzae infection. This study confirmed the fact that S.aureus remains the commonest cause of bacterial conjunctivitis in the general populace. Most of isolates show susceptibility to most antibiotics used for treatment of bacterial conjunctivitis. Tetracycline, chloramphenicol, and oxacillin are the drugs of choice in our environment.

**CREME IN THE LUNGS: THE SILENT KILLER**

Alhanouf Alsaleem, Sami Alhaider  
King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.  
E-mail: H_alsaleem@hotmail.com

Lipoid pneumonia is a rare disorder caused by lipid accumulation in the alveoli, leading to significant lung damage. Exogenous lipoid pneumonia in children represents a preventable serious complication of improper use of high-lipid containing nutritional supplements. We are reporting a challenging 3-month-old infant with a history of persistent and progressive respiratory distress not responding to medical treatment. History revealed prolonged (4 weeks) butterfat ingestion as nutritional supplement since the age of 2 weeks. The information of lipid ingestion was repeatedly denied by parents in the earlier course of presentation. The outpatient course was complicated by superimposed Mycobacterium fortuitum infection and lung abscess formation that required anti-mycobacterial combination therapy, systemic corticosteroids, a trial of therapeutic bronchoalveolar lavage and surgical excision with debridement. Improving the awareness of exogenous lipoid pneumonia in the community can lead to elimination of harmful cultural habits and can ultimately reduce mortalities and morbidities related to this condition.
VITAMIN D STATUS IN CHILDREN WITH SYSTEMIC LUPUS ERYTHEMATOUS AND ITS ASSOCIATION WITH CLINICAL AND LABORATORY PARAMETERS

Alhanouf AlSaleem, Ashwaq AlE’ed, Afaf AlSaghier, Sulaiman M Al-Mayouf
Paediatrics, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: H_alsaleem@hotmail.com

Objective: To assess vitamin D status in Saudi children with SLE and determined its association with clinical, laboratory variables and disease activity.

Methods: The study cohort comprised children with SLE who are followed at paediatric lupus clinic. All patients were reviewed for demographic data, age of first disease manifestations, disease duration. All included patients were evaluated for disease activity, which is completed by using the SLE Disease Activity Index (SLEDAI), laboratory parameters included vitamin D profile, bone markers and bone densitometry at enrollment and 3 months later. All patients were treated with cholecalciferol (vitamin D3) 2000 IU daily and calcium supplement (caltrate 600 mg twice daily.

Results: Twenty-eight patients (26 females) with mean age of 9.7 years completed the evaluation. Fifteen patients had more than one major organ involvement. Most of the patients are on daily vitamin D supplement (800IU) prior the enrollment. Baseline assessment revealed 24 patients had low level of 25(OH) D levels, with mean of 51.8 nmol/L (SD + 33.9), and 25 patients had high autoantibodies and 18 patients had high protein/creatinine ratio with mean of 0.88(SD + 1.7). Bone density was subnormal with mean of 0.9 (SD + 0.97). The mean disease activity was 6 (SD + 6.3). 25(OH) D levels correlated inversely with autoantibodies and SLEDAI and positively with bone density but not statistically significant. After 3 months of treatment with vitamin D3 and calcium supplement, 17 patients had improvement in SLEDAI score and autoimmune markers.

Conclusion: Disease activity of childhood SLE is probably linked with low 25(OH) D levels. Accordingly, high daily vitamin D supplement perhaps has a role in ameliorating the disease activity of childhood SLE. Further followup and more patients needed to confirm this finding.

TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT (TIPSS) IN CHILDREN: SINGLE-CENTRE STUDY

D. Al Romaili1, A. Al Mehaidib1, H. Al Suhaibani2, W. Al Dekhail1

1Department of Paediatrics, 2Department of Radiology, King Faisal Specialist Hospital and Research Centre, Riyadh, Kingdom of Saudi Arabia.
E-mail: dalromaili@kfshrc.edu.sa

Background: Variceal haemorrhage is a major cause of mortality and morbidity in patients with portal hypertension. The management of bleeding varices has been a particular challenge to clinicians. Transjugular intrahepatic portosystemic shunt (TIPSS) has resulted in good stability in many cases. It has been in use for more than 20 years to treat the complications of portal hypertension. (TIPSS) has been created in thousands of adult patients with liver disease worldwide.(1) Although (TIPSS) has resulted in excellent outcomes, it is limited by a high re-bleeding rate in the adult patients.(2) Many literatures study the predictive variables for further (TIPSS) complications. The predictors of mortality in adult patients within 30 days after the procedure included prothrombin time (PT) greater than 17 seconds, and serum creatinine level greater than 1.7 mg/dL.(3) (TIPSS) is used in the paediatric age group but is not commonly reported, and thus there are seldom literature reviews discussing its associated risks and predictors of complications in children.(4) The paucity of utilizing TIPSS in the paediatric age may be referred due to the fact that 80% of children with cirrhosis reach the end-stage liver disease before reaching 2 years of age where (TIPSS) can be inserted, and most die or undergo liver transplant or surgical portosystemic shunt placement before becoming a candidate for (TIPSS).(5) This is a single-centre study that studies the possibility of using pre- and postoperative routine labs as predictors of (TIPSS) failure in the paediatric age group.

Objective: The aim is to analyse retrospectively the use of pre- and postoperative labs as predictors for TIPSS failure in the given sample.

Methodology: This is a retrospective study with a paediatric sample of 10 patients (n = 10). Inclusion criteria include:
- Age younger than 14 years at the time of (TIPSS) insertion.
- Patients who underwent TIPSS from September 1998 to December 2013 in King Faisal Specialist Hospital and Research Centre (KFSH&RC).
- No co-morbidities aside from the primary liver disease.

The sample contains 3 male patients (30%) and 7 female patients (70%). The obtained data of the labs, which were done within 1 month before and after (TIPSS) placement, are expressed in mean values. Followup time is defined as the time interval, expressed in months, between (TIPSS) insertion to either the last clinic review or when the patient becomes 14 years of age, at which they will be referred to adult hepatology medicine.

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Patients are divided into two groups according to the procedure success:  
• Success (Control): did not require (TIPSS) revision within 36 months after the procedure.\(^{(5)}\)  
• Failure (Case): required (TIPSS) revision within 36 months after the procedure.\(^{(5)}\)  

**Results:** 10 patients are reviewed. The primary indication for (TIPSS) is variceal haemorrhage in all the patients with different diagnoses. All varices are thought to have caused because of portal hypertension secondary to liver disease. Congenital hepatic fibrosis is found to be the most common aetiology (50%) among the sample. All patients were available during the followup. 3 patients (30%) needed revision within a mean of 24.2 months after the procedure. All failures were due to (TIPSS) obstruction. 7 patients (70%) did not require revision 36 months after procedure, with a mean followup of 31.5 months. Preoperative high serum phosphatase (ALP) is associated with (TIPSS) failure \( (p \text{ value} = 0.027). \) The lowest (ALP) value among the failure group is 300 unit/L, and thus, serum (ALP) of a value of 300 unit/L and higher can be used as a preoperative predictor for (TIPSS) failure. Other variables do not show significant association with (TIPSS) failure, including patients' age and weight.  

**Conclusion:** Serum (ALP) is associated with (TIPSS) failure in the paediatric age group. However, further studies are required with a larger sample size.

**DIAGNOSTIC YIELD OF COLONOSCOPY IN SAUDI CHILDREN WITH RECTAL BLEEDING: EXPERIENCE FROM TERTIARY CARE CENTER**

**Eman Aljhani, Abdullah Alshanbari, Badr Alsaleem, Ali Asery, Abdulrahman Al-Hussaini**  
King Fahad Medical City, Riyadh, Saudi Arabia.  
E-mail: emanjaljhani@hotmail.com

**Background and objectives:** Bleeding per rectum (BPR) is a common presentation in paediatric patients. Local data on utility of colonoscopy in the diagnosis of BPR is very limited. The objectives of our study were to determine the clinical utility of colonoscopy and the spectrum of causes of BPR in Saudi children presenting to Specialized Children's Hospital at King Fahad Medical City, with BPR.  

**Methods:** The endoscopy reports of all children (0 - 13 years of age) who underwent colonoscopy or sigmoidoscopy because of BPR at the Specialized Children's Hospital at King Fahad Medical City, during the period from 2007 to 2013, were retrospectively reviewed.  

**Results:** During the study period, colonoscopies were performed on 120 children with BPR (67 males; mean age 6.8 yrs ± 3.8). Colonoscopy procedure revealed the diagnosis in 106 children (88.3%). The most common etiologies of PRB were: inflammatory bowel disease = 35 cases (29%), colonic lymphonodular hyperplasia = 20 cases (16.6%), rectal mucosal prolapse syndrome = 13 cases (10.8%), and colonic polyps = 12 cases (8.3%). Colonoscopy procedure was completed in 106 of 114 cases (93%) and sigmoidoscopy was performed in 6 cases.  

**Conclusion:** The diagnostic yield is very high in children with BPR. Inflammatory bowel disease, colonic lymphonodular hyperplasia, rectal mucosal prolapse syndrome, and colonic polyps constitute the 4 most common causes of BPR in Saudi children.

**SMOKING AMONG SAUDI FEMALE MEDICAL STUDENTS**

Meshari Dalbouh\(^{1}\), Mushabbab Asseri\(^{2}\), Gasmelseed Ahmed\(^{3}\), Abdul Rhaman Jazieh\(^{3}\)  
\(^{1}\)Paediatrics Department, Aseer Central Hospital, \(^{2}\)Medicine Department, Riyadh Military Hospital, \(^{3}\)Oncology Department, King Abdulaziz Medical City, Saudi Arabia.  
E-mail: dalbouh1407@hotmail.com

**Background:** Past studies from limited individual colleges have reported the prevalence of smoking among Saudi female medical students. No national study evaluating the prevalence and perception of female medical students from different geographic and socioeconomic regions towards smoking has been reported.  

**Objective:** The aim of this national study was to determine the prevalence of smoking, and to describe the perceptions of Saudi female medical students towards smoking.  

**Methods:** A cross-sectional study using a survey about female medical student smoking habits and perceptions about smoking was distributed to 9 medical schools. Descriptive statistics for many variables have been done.  

**Results:** A total of 1404 respondents were included in the study. The prevalence of smoking among female medical students was 23.27%. We see different trends in the prevalence between different medical schools. 2.65% is the rate of current smokers. Most of students start smoking in early medical school years. The negative influence created by home role model was the most common reason to starting smoking. 70.18% think that it does not make a difference for them as medical students to smoke.  

**Conclusions:** The prevalence of smoking among Saudi female medical students is increasing and a large percentage of smokers did not feel smoking as a bad habit for a medical student. Accordingly, it is recommended that a preventive health education programme on smoking be initiated for female medical students.
medical students in early years of medical college while considering stress relieving strategies and to implement a new academic curriculum to deal with smoking and smokers.

**AMBIGUOUS GENITALIA: USE YOUR HEARING SENSE**

Mohamed Al Maghamsi  
Consultant Paediatric Endocrinologist, Supervisor of Postgraduate Center, Madina Maternity & Children’s Hospital. 
E-mail: msfaleh@yahoo.com

**Introduction:** The diagnosis and management of ambiguous genitalia is usually a challenge for paediatricians. Our aim is to discuss a case of ambiguous genitalia in which the diagnosis was unusual.  
**Case report:** The child was referred for gender evaluation within 24 hours of birth. The baby was the first child to non-consanguineous parents and the delivery and birth weight were normal. During consultation, the 25-year-old primigravida mother was noticed to have a “male-like” voice. She developed acne and facial hair since the first trimester without exposure to androgen during pregnancy. There was no significant family history of note. Physical examination of the child revealed a 3 cm phallus with basal urethral opening, dark skin, incomplete fusion of labio-scrotum and no palpable gonads.  
**Results:** Pelvic ultrasound showed normal-looking female internal genitalia and laboratory investigations excluded congenital adrenal hyperplasia (normal ACTH and 17 hydroxyprogesterone). The testosterone level on day 2 was 8.6 and chromosomal karyotype was 46XX. Because both the mother and the baby were virilised, diagnosis of aromatase deficiency was suspected and the decision to raise the baby as female was made. Endocrine workup for the mother revealed raised testosterone levels, which subsided to normal after 6 weeks post-delivery and her pelvic USS and MRI showed no evidence of adrenal or ovarian pathology.  
**Conclusion:** Aromatase deficiency is rare; however, this diagnosis should be considered when the ambiguous genitalia does not fit the usual causes. In this condition, listening to the mother’s voice can indeed make the diagnosis earlier than hormone assays.

**LITERATURE REVIEW OF PENETRATING TORSO INJURIES AND AN ATTEMPT TO DESIGN AN APPROACH ALGORITHM**

Abdulaziz Shaher  
Saudi Board Resident, Armed Forces Hospital, Southern Region. 
E-mail: Dr.Shaher@gmail.com

**Introduction:** The evolving advances in imaging technology and the introduction of highly intensive patient monitoring over the last century have changed the management of torso-penetrating injuries dramatically. Laparoscopy and conservative management, which were once an absolute contraindication or at least not a valuable option, became an integral part of the armamentarium of the trauma surgeon in the management of such injuries. The literature in the topic is vast and the approach is different depending on many factors like the surgeon him or herself, the hospital setting, timing of injury and most importantly the site of the injury.  
**Methodology:** PubMed search revealed 65 studies on the topic and each study was evaluated and critiqued with the intention to review all the possible approaches of management that have been reported in the literature and study each one separately and identify which is more superior, according to the anatomical site of injury.  
**Summary:** After reviewing the literature on penetrating torso injuries, a final algorithm was designed that should cover all the available options and compare it to each other.

**COMBINED APPROACH IN THE MANAGEMENT OF REFRACTORY CHYLOUS ASCITES IN ONCOLOGY PATIENTS**

A. Alkudayri, Z. Habib, S. Koussayer  
King Faisal Hospital & Research Center, PO Box 3354 Riyadh 11211,  
E-mail: alkudayri@gmail.com

**Introduction:** Postoperative chylous leak is a rare complication of lymphatic channel disruption or obstruction following surgical resection of retroperitoneal tumours representing a difficult management problem due to the significant mechanical, nutritional and immunological consequences of the constant loss of protein and lymphocytes. The management of a chylous leak is either conservative or interventional (surgical and/or radiological).  
**Methods:** We are reporting two cases of refractory chylous ascites, which were managed successfully using a combined approach (intra-operative lymphangiogram and laparoscopy) in two paediatric patients who had retroperitoneal tumour resections (neuroblastoma and nephroblastoma). These interventions were dictated by the failure of conservative management (total parental nutrition, octreotide, and low fat diet), and/or timing of scheduled chemotherapy cycle. Our combined approach was used to identify and treat the source of lymphatic leak simultaneously. The modalities of intervention included diagnostic laparoscopy, intraoperative ultrasound localization of the inguinal lymph nodes followed by a lymphangiogram under fluoroscopic guidance. The site of the lymphatic leak identified was handled by a mini-
lапarotomy, suture ligation and omental patch combined with haemostatic agents. Both patients proceeded to scheduled chemotherapy within one week of the intervention. No recurrences were observed on six-month followup.

**Conclusion:** The usual conservative management of a lymphatic leak for a prolonged period should not be an option in oncologic patients, as it will delay the completion of the chemotherapeutic treatment protocol which might theoretically increase the risk of recurrence. With the available and advanced resources, early intervention for a lymphatic leak is recommended in oncology patients to minimize complications and follow the treatment protocol.

**GIANT RETROPERITONEAL BRONCHOGENIC CYST MIMICKING ADRENAL GLAND TUMOUR**

Abdullah Alkhudayri¹, Ihsan Alalem¹, Mohammed Ahmed², Hindi Al Hindi³  
¹Department of Surgery, ²Department of Medicine, ³Department of Pathology & Laboratory Medicine, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.  
E-mail: alkhudayri@gmail.com

**Objective:** To report a case of giant paraadrenal cyst mimicking adrenal tumour.

**Methods:** Clinical exam, imaging (CT/MRI), hormonal, surgical, histopathological findings and literature survey.

**Case presentation:** A 45-year-old hypertensive male had incidentaloma picked up during investigations for recurrent renal stones of 15 years’ duration. MRI study revealed a 10 cm well-defined lobulated left adrenal mass with increased signal intensity on T2 and decreased intensity on T1-weighted images with peripheral capsular and septal enhancement representing lipid-poor adenoma. Hormonal studies for the followings were WNL: 24-hour urine metanephrine (0.65 umol/day), normetanephrine (2.45 umol/D), serum cortisol AM (406 nmol/L; RR: 171 - 536), upright serum aldosterone AM (309 pmol/L; RR: up to 831), DHEAS 2.8 (umol/L; RR: 2.99 - 11.5), testosterone (15 nmol/L; RR: up to 831), DHEAS 2.8 (umol/L; RR: 2.99 - 11.5), testosterone (15 nmol/L; RR: 9.9 - 27.8). At open laparotomy, a large adrenal-related mass was resected. The lesion was attached to and had ruptured through the diaphragm requiring repair of the diaphragmatic defect superiorly. Histopathology findings: 12 cm oval cystic 312G unilobular but septated thick pale mucoid material containing cystic lesion with normal golden yellow normal adrenal attached to the cyst. Cyst was lined by respiratory columnar ciliated epithelium and bronchial mucus glands.

**Discussion:** Bronchogenic cyst represents an anomaly during the development of the primitive foregut, from which the bronchi and lungs develop. It results from aberrant budding from the ventral diverticulum, pinching off lung epithelium from primitive ventral foregut with aberrant migration into the abdomen before fusion of diaphragm. Subdiaphragmatic and mediastinal locations are rare. Lung and mediastinal (subcarinal) locations are typical. Histological confirmation consists of ciliated epithelium together with cartilage or bronchial mucus glands.

**Conclusion:** Our case of giant retroperitoneal cyst in close proximity to adrenal is uncommon. Diagnostic imaging findings cannot differentiate from diverse causes of retroperitoneal tumours. It should be taken into account in differential diagnosis of adrenal tumour, cystic teratoma, broncholunmonary sequestration cysts of urothelial and female origin or hydatid cyst. Surgical resection is recommended for definitive diagnosis and to prevent future complications.

**IS OBESITY A RISK FACTOR FOR MENSTRUAL ABNORMALITY IN SAUDI FEMALES?**

L. Mawaldi¹, A. Alsada², A. E. Ahmed²  
¹Department of Ob-Gyn, King Abdulaziz Medical City, National Guard Hospital, ²Department of Epidemiology and Biostatistics, College of Public Health and Health Informatics, King Saud bin Abdulaziz University for Health Sciences, Riyadh, KSA.

E-mail: dr.mute@hotmail.com

**Objective:** To estimate the risk of obesity as a cause of abnormal menstruation among Saudi females.

**Setting:** King Abdulaziz Medical City, National Guard hospital, Ob/Gyn Department, Gynecologic clinics, Riyadh, Saudi Arabia.

**Design:** A retrospective case-control study.

**Population:** A cohort of 145 females, 72 with normal menstruation, and 73 with abnormal menstruation.

**Methods:** The data were collected from patients’ charts: Age, abnormality of menstrual type, weight (kg), BMI(kg/m²), waist circumference (wc) and blood samples were obtained: fasting insulin, glucose level, total testosterone, TSH, cholesterol, HDL and LDL. With inclusion criteria: 1) age between 11 to 35 years, and 2) married, and exclusion criteria: 1) no hormonal treatment, 2) not pregnant, 3) not breast-feeding, and 4) not diabetic patient.

**Results:** The results of unadjusted analyses show that abnormal menstruation was more common among obese women (OR = 5.5; 95% CI: 2.156 - 14.232), women with medium central obesity (OR = 5.5; 95% CI: 1.998 - 15.329), and high central obesity (OR = 9.4; 95% CI: 3.548 - 24.695) compared with their reference. High TSH, high testosterone, high cholesterol, high insulin, low HDL, and high LDL were associated with abnormal menstruation (p-values < 0.05). The adjusted odds of abnormal menstruation increased with increasing central obesity, (OR = 10.4; 95% CI: 2.927 - 36.946) with medium and (OR
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OUTCOMES OF MITRAL VALVE SURGERY FOR MITRAL STENOSIS

Alqasem Fuad H. Al Mosa, Hani Najm, Aamir Omair
King Saud bin Abdulaziz University for Health Sciences.
E-mail: alqasem.almosa@gmail.com/almosa046@ksau-hs.edu.sa

Objective: Mitral valve replacement with either bioprosthetic or mechanical valves is used to treat mitral stenosis. This study evaluated their outcomes.

Methods: A retrospective cohort of 195 mitral stenosis patients who had mitral valve replacement with either bioprosthetic (n = 50) or mechanical (n = 145) valves in our institute from 1999 to 2012. Data were analyzed for mortality, functional class, echocardiographic findings, complications and survival. Chi-square, logistic regression, Kaplan Meier and McNemar tests were employed.

Conclusion: Mechanical mitral valve replacement in mitral stenosis patients is associated with less late mortality, better functional classes, less re-operations, and better survival as compared to bioprosthetic valves. Stroke occurrence is associated with late mortality and worse functional classes.

INTESTINAL INTUSSUSCEPTION AND CELIAC DISEASE: IS THERE AN ASSOCIATION?

Anwaar Saud Al Daher, Mariam Mahmoud Ali, Abdulwahab AlJubab, Nouri Orfali, Abdulrahman Al-Hussaini
King Fahad Medical City, Riyadh, Saudi Arabia.
E-mail: a.althahir@hotmail.com

Background: Aside from isolated case reports, intussusception has not been linked with paediatric celiac disease (CD). The objective of the study was to investigate the frequency of intussusception among children with CD.

Methods: The hospital electronic medical records of the paediatric cases of intussusception (0.5 - 12 years of age) diagnosed during the period from 2008 to 2013 were retrospectively reviewed. A patient database containing children with biopsy-proven CD was also reviewed.

Results: Among the 30095 children seen at our institution during the study period, 42 cases of paediatric intussusception were identified (0.14%). Of these 42 cases, 3 were diagnosed with celiac disease (7.14%). Among the 71 cases of CD diagnosed during the study period, 3 cases (median 2.5 years, range 1.4 - 3 years) experienced an intussusception at time of their diagnosis with CD. Because of the asymptomatic nature of intestinal intussusception, all cases were managed conservatively. Three months after initiation of gluten-free diet, all children showed spontaneous resolution of intestinal intussusception on repeated abdominal ultrasound.

Conclusion: Intussusception was far more common among children in our cohort with CD than in the general paediatric population simultaneously seen at our center. The diagnosis of CD should be considered in children with intussusception.

ONE YEAR EXPERIENCE OF SINGLE INSTITUTE IN SURGICAL TREATMENT OF SECONDARY HYPERPARATHYROIDISM

Khalid Alhajri, Deem Alaqeel, Eyad Alkharashi, Hussam Binyousef, Khalid Alzoman, Abdullah Alghamdi
Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: deemalaqeel@gmail.com

Background: Hyperparathyroidism is a consequence of chronic kidney disease. Ectopic parathyroid glands may be the cause of surgical failure in patients undergoing near-total or total parathyroidectomy.

Purpose: To review the difference between total and subtotal parathyroidectomy in treatment of secondary hyperparathyroidism and the incidence of ectopic parathyroid gland.

Methods: A retrospective review of surgeries conducted for a total of 27 patients done between June 2013 to June 2014 in Prince Sultan Military Medical City. The preoperative localizations of parathyroid found by ultrasonography (USG) and Tc99m-Sestamibi scintigraphy (MIBI) were subsequently compared with intraoperative findings. PTH was measured preoperatively and postoperatively to determine the success of the surgery.

Results: In 27 patients, 19 cases of near-total parathyroidectomy, 7 cases of total parathyroidectomy and reimplantation of parathyroid gland to sternocleidomastoid muscle and one case of total parathyroidectomy only. Hemithyroidectomy was done for two cases because of suspicious nodules, one of them turned out to be PTC and one total thyroidectomy for PTC. Ectopic parathyroid was found in two cases, one in the thymic horn and the other one in the mediastinum where sternotomy was done later. Mean PTH preoperatively was 1663 and postoperatively was 113.
Conclusion: There is no difference between total and near-total parathyroidectomy in the treatment of secondary hyperparathyroidism. The incidence of ectopic parathyroid gland and PTC in secondary hyperparathyroidism is significant. Preoperative imaging tests may not locate most of ectopic glands.

PROPOSED RESIDENTS’ OPERATIVE CASE TRACKING AND EVALUATION SYSTEM

Deema Nezar Sehli, Saleh Baeesa
King Abdul-Aziz University Hospital, Jeddah, Saudi Arabia.
E-mail: sehlid@hotmail.com

Introduction: Neurosurgery programme trainers are continuously searching for new methods to evaluate trainee competency in addition to number of cases and training duration. Effort is made on developments of reliable methods to teach competency and to measure teaching efficacy.

Objectives: To propose a designed system that helps to assess a resident’s performance quality during each procedure.

Methods: We developed a database system for neurosurgical attending physicians and residents, which allows residents to enter each procedure record and send it to his/her attending physician to approve and evaluate resident’s skill and knowledge for that particular procedure. After submitting the case, data will be automatically uploaded in the system and can be viewed by users as reports to monitor the resident’s progress and exposure.

Results: This system will add a more informative and objective method to assess and monitor the resident’s performance and progress during each procedure to help the residents to identify areas of weaknesses and strengths. In addition, it enables a fair comparison between the residents as well as experience offered by different training centers.

Conclusions: This proposed evaluation will provide a transparent assessment for the residency-training programmes and should help to graduate competent, safe and well-trained neurosurgeons.

PANCREATICOGASTROSTOMY - A MODIFIED SIMPLE AND SAFE TECHNIQUE: TERTIARY HOSPITAL EXPERIENCE

Deena Hadedeya, Saud Almuhammadi
Department of Surgery, King Faisal Specialist Hospital & Research Center (Gen. Org.), Jeddah, Saudi Arabia.
E-mail: deena.hadedeya@gmail.com

Background: Pancreatico-duodenectomy is the treatment of choice for peripancreatic pancreatic tumours. This procedure carries a significant risk and morbidities, most of them are related to pancreatic anastomotic failure. Many techniques have been described to decrease the anastomatic leak rate and related complications. Pancreatico-gastrostomy is one of the techniques utilized to restore the pancreatic continuity after pancreatic head resection.

The aim of this study is to describe and evaluate our modified pancreatico-gastrostomy technique.

Design: Retrospective review was done for all patients who underwent pancreatico-duodenectomy between 2008 to 2014 at King Faisal Specialist Hospital & Research Center (Gen. Org.) Jeddah, Kingdom of Saudi Arabia.

Method: A total of 34 patients underwent a pancreatico-duodenectomy with pancreatico-gastrostomy using our modified technique. Our reviewed variables include indication for surgery, intra-operative and postoperative variables and postoperative complications.

Results: At King Faisal Specialist Hospital & Research Center (Gen. Org.) Jeddah, in group of patients who underwent pancreatico-gastrostomy (n = 34) including 20 males and 14 females, the mean age was 58.53 years (SD 14.1). The histopathology review postoperatively showed 7 benign cases and 27 malignant cases. The indications for pancreatico-duodenectomy based on the histopathology have been divided into 5 main categories: adenocarcinomas, neuroendocrine tumours, intra-ductal tumours, cystic lesions of the pancreas, trauma and others including inflammations and fibrosis. The mean tumour size was 3.23 cm in diameter (range, 0 - 11 cm) with (0 - 6) number of lymph node involvement. There was a vascular invasion in 23.5% of the cases. The higher morbidity rate from pancreatico-gastrostomy following pancreatico-duodenectomy was 20.5% due to wound infection, followed by 14.7% as a result of atelectasis and 8.8% was due to delayed gastric emptying. Intra-operative and postoperative haemorrhage, abscesses and collections, wound dehiscence and pulmonary embolism (PE) counted 5.8% of the complications. Pancreatic and biliary fistulas, lymphatic duct injury and deep venous thrombosis (DVT) occurred in 2.9% of the patients. The lowest complication rate was 0% in major conditions such as cholangitis and acute pancreatitis.

Conclusion: Pancreatic stump invagination into the gastric lumen for about 2 cm with a two layer fixation of the ventral surface of the pancreas might be associated with a lower risk of pancreatic anastomosis failure. Further studies with a larger number of cases are needed to support our finding.

ACUTE EPIPLIOIC APPENDAGITIS: A RARE CAUSE OF ACUTE ABDOMEN WITH DIAGNOSTIC DILEMMA

Afnan F. ALMuhanna, Zead M. ALGhamdi, Eiman AlShammari
Acute epiploic appendagitis is a relatively rare cause of lower abdominal pain that clinically mimics other acute abdomen conditions requiring surgery, such as acute diverticulitis or appendicitis. Herein, we are reporting case of a 50-year-old lady who presented with unusual lower abdominal pain. Awareness of such clinical condition with its characteristic imaging findings is important to avoid costly hospitalization, unnecessary antibiotic courses and the morbidity and mortality associated with surgical procedures.

**Introduction:** Epiploic appendagitis is an uncommon clinical condition resulting from torsion and inflammation of an epiploic appendix that leads to localized abdominal pain. Usually, it has a smooth clinical scenario after a correct diagnosis. Vagueness of clinical presentation usually accounts for the difficulty of diagnosing this pathology. Radiological studies, particularly enhanced abdominal CT scan, have a valuable role to reach the right diagnosis and to spare the patient unnecessary hospitalization or surgery in uncomplicated cases.

**Case report:** A 50-year-old female who is known to have non-insulin dependent diabetes mellitus, hypertension and dyslipidemia. The patient presented to the emergency department complaining of acute localized, left lower abdominal pain for one day. The pain was acute in onset, constant and increasingly severe. It was relieved partially by over-the-counter analgesics.

On physical examination, abdominal examination was positive only for localized tenderness in the left lower quadrant.

The patient was admitted to the surgical ward and started on liquid diet, non-steroidal anti-inflammatory drug and antibiotic. Kept for observation for a couple of days and discharged in good condition. Patient was followed in the outpatient clinic once with uneventful course.

**Conclusion:** We aim to increase the clinical awareness by presenting such a rare aetiology of localized abdominal pain, which can easily mimic the clinical presentation of other common causes of acute abdomen such as acute appendicitis and diverticulitis and to emphasize the importance of using the CT scan to diagnose vague clinical presentation, which at the end helps to avoid unnecessary surgery and hospitalization.

**BLOOD LOSS ESTIMATION USING GAUZE USING VISUAL ANALOGUE**

Emran AlGadiem, Abdulmohsen Alessa, Huda Alsubaie, Nora Boheliga, Jehad Algadeeb, Hussain Alsunani

**Aims:** Propose a gauze-based visual guide to help estimate blood loss during operative procedures.

**Methods:** An expired whole blood was used to simulate calculated amount of blood loss and it was wiped using surgical gauze of different sizes (10 x 10 cm, 30 x 30 cm, 45 x 45 cm). Each gauze was photographed and blood was increased in an increment of blood to the gauze and repeated until fully soaked. The total absorptive capacity of each gauze was documented and the pattern of soaking to the gauze was used to reconstruct a visual analogue to help estimate blood absorbed by the gauze when it is partial-soaked.

**Result:** A guide reconstructed to estimate blood loss by different staining pattern and identify absorptive capacity to each gauze. The total absorptive capacity of 10 x 10 cm was 12 mL, 30 x 30 cm was 160 mL, and 45 x 45 cm was 160 mL.

**Conclusions:** The guide may provide a better visual estimation of blood loss absorbed by gauze.
of life (average age of 2.6 days). The surgical management included variety of procedures, staged Swenson (open in 22 patients and lap-assisted in 5 patients) and Duhamel in 7 patients. One-stage transanal Soave pull-through was done in 13 patients. 31 patients (60 percent) had One-stage procedure in various techniques.

Results: No mortality happened in this series. Complications included wound infection in 3(6%), bowel obstruction in 2(4%), anastomotic leak in 2(4%), intussusception in 1(2%). Ileostomy problems occurred in 6 children (12%), 5 had prolapse and had stenosis prior to definitive pull-through. Enterocolitis was noticed in 5 patients (10%) preop and in 7 postop (13%). All recovered and no further recurrence. Constipation was seen in 14 children (25%) of patients, mostly was mild to moderate and resolved in 6-month period in all. All were post-Swenson procedure. One case only was incontinent of stool presented at age of 11 years. No child had any urinary incontinence. The sexual function was not assessed in this series, but erection was present in older boys on followup. Two cases underwent a redo procedure (Swenson) for retained segment, one from our series and the other had a primary pull-through elsewhere, both are well after the second procedure. Cases where leak is suspected, immediate diagnosis and management (usually by diverting ileostomy) is a paramount to save the child and the sphincter function.

Conclusion: Hirschsprung disease is common. It is managed by different procedures and approaches. If not treated, it can lead to serious complications and in some cases to death from enterocolitis and sepsis. These children should be carefully followed for short-term complications and long-term results. In this presentation, we will share our results with you.

CERVICAL THYMIC CYST IN AN ADULT

H.A. Alzahrani1, Javeria M. Iqbal2, Amani K. Abu Shaheen, Bandar N. Al Harthi3

1Department of Surgery, King Khalid University, Abha, 2Department of Surgery, King Fahad Medical City, Riyadh, Saudi Arabia.

Background: Cervical thymic cysts (CTCs) are unusual lesions, representing only 1% of cystic cervical masses, with diagnosis of this condition in adults even rarer.

Case report: We report a 34-year-old female who presented with asymptomatic progressively growing left-sided neck swelling. Neck ultrasound (US) showed a large cystic lesion with septation, compressing the ipsilateral vessels. Magnetic resonance imaging (MRI) confirmed the US findings. Surgical excision was performed, which subsequently showed findings consistent with CTC.

Conclusion: CTC in adult is extremely rare, with few reported cases identified in the literature. Thymic gland anomalies in the neck are the consequences of an arrest in the descent of the gland, sequestration of the thymic tissue or failure of involution.

The diagnosis of this condition is rarely done prior to surgical excision. The clinical presentation, radiologic imaging, surgical findings, and histologic appearance are all essential components in making the correct diagnosis of this very rare differential diagnosis of cystic lateral neck swelling.

GALLBLADDER AGENESIS WITH A PRIMARY CHOLEDODHAL STONE IN A PATIENT WITH SITUS INVERSUS TOTALIS

H.A. Alzahrani1, N.M. Yamani2

1Department of Surgery, King Khalid University, Abha, 2Department of Surgery, King Fahad National Guard Hospital, Riyadh, Saudi Arabia.

Background: Situs inversus totalis is an inherited condition characterized by the mirror-image transposition of thoracic and abdominal organs. Gallbladder agenesis, which has normal bile ducts, is a rare congenital condition that occurs in 13 to 65 people out of 100,000. A common bile duct (CBD) stone or choledocholithiasis in patients with gallbladder agenesis is even rarer.

Case report: We report a 68-year-old female who presented with epigastric pain and jaundice. She was not known to have situs inversus totalis. Abdominal ultrasound showed a large stone in the CBD, which could not be extracted by endoscopic retrograde cholangiopancreatography (ERCP), necessitating exploration. The gallbladder and cystic duct were found to be absent. Incisional exploration of the CBD was performed, and the large stone was removed. A cholecystoscope was used to identify the remnants and exclude the presence of ectopic gallbladder, and a T-tube was placed into the CBD.

Conclusion: Gallbladder agenesis in a patient with situs inversus totalis is extremely rare, with no single reported case identified in the literature. In addition, our case shows a rare complication of ERCP – a failure to extract the CBD stone – and illustrates a way to overcome this complication.

Keywords: Agenesis, Gallbladder, Choledochal stone, Choledocholithiasis, Situs Inversus Totalis

EFFECT OF VISUAL SPATIAL TRAINING IN SURGICAL SKILL ACQUISITION

N. Al Saleh, H. Idriss

King Khalid University Hospital, Riyadh, Saudi Arabia.

E-mail: hind.drees@gmail.com
A person’s proficiency in three-dimensional visualization is referred to as his or her visual spatial ability. Innate visual spatial ability varies, but studies show it may be improved through practice. Visual spatial ability is a valuable attribute for surgeons in training, as it has been shown to correlate with initial surgical skill acquisition. Despite the consensus that visual spatial ability is positively correlated with surgical skills, no research project has yet sought to determine whether training on visual spatial tasks would improve surgical skills as well. The goal of this study was to determine whether neuropsychological visual spatial training would transfer to improved surgical skill acquisition among medical students.

This study consisted of a three-phase educational intervention for medical students. Phase 1 assessed baseline visual-spatial ability and surgical skill: visual-spatial ability through the Peters mental rotation test A, Santa Barbara Solids Test, and Guay-Lippa perspectives test, and surgical skill through the Fundamentals of Laparoscopic Surgery (FLS) Peg Transfer and Precision Cutting tasks and one open bowel anastomosis task. For surgical tasks, both speed and accuracy were measured. Phase 2 involved computer-based visual spatial training over four weeks using Cengage Learning’s “Developing Spatial Thinking,” created by Sheryl Sorby. No surgical skills training was provided. In Phase 3, all participants completed the same surgical tasks as in Phase 1, and performance scores were assessed for improvement. Twenty-three first and second-year students at the Tulane University School of Medicine completed the programme over three months in the fall of 2014 and winter 2015. An even number of male and female participants were recruited, and we sought to enroll students without any prior visual spatial or surgical skill training. Data from students’ visual spatial and surgical skills results were analyzed using Pearson’s correlation coefficients and Students’ t-tests. For the test results that were not normally distributed, a Wilcoxon-Mann-Whitney test was used. Following visual-spatial training, there was a statistically significant improvement in students’ accuracy on both the FLS Peg Transfer and the open bowel anastomosis, as well as improvement in students’ speed in completing all three surgical tasks. For the FLS Precision Cutting task, there was improvement on average but it was not found to be statistically significant. Interestingly, the degree of improvement in both speed and accuracy was similar between students with high baseline aptitude in visual spatial testing and surgical skill and lower baseline scores in these areas.

Based on the results of our study, visual spatial training appears to be a promising way to improve surgical skill acquisition, though repetition of the project with a larger sample size and addition of a control group who do not undergo visual-spatial training would be important to validate the results. If data continue to demonstrate the value of visual spatial training in surgical skill acquisition, an incorporation of computer-based visual spatial training into formal medical education should be considered. This novel approach could reduce the total time and resources required to train surgeons with traditional training methods that involve costly surgical and laparoscopic practice equipment and on-site instructors.

**UNILATERAL RENAL AGENESIS:NECESSITY OF POSTNATAL EVALUATION**

Khalid Albedawi, Osama Sarhan, Badr Al Harbi, Abdulhakim Al Otay, Mustafa Al Ghanbar, Ziad Nakshabandi
Paediatric Urology Division, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.
E-mail: kapedawi@hotmail.com

Introduction: Infants with prenatal diagnosis of unilateral renal agenesis (URA) are commonly referred to paediatric urologists for evaluation. Postnatal renal bladder ultrasound (RBUS) and a voiding cistouretrogram (VCUG) are usually conducted. Additionally, dimercaptosuccinic acid scan (DMSA) may be utilized for confirmatory and prognostic reasons. We assessed the need for postnatal evaluation and the long-term consequences in patients with this diagnosis.

Patients and methods: A retrospective review of the records of all patients with prenatal diagnosis of URA between 2004 and 2013 was done. We included all patients who underwent postnatal evaluation with RBUS, DMSA and VCUG. Long-term followup included physical examination and assessment of contralateral renal growth.

Results: A total of 46 children with URA were identified. Ultrasounds showed associated hydronephrosis in 7 patients (15%). DMSA scans confirmed the diagnosis of URA in all patients and showed renal scars in two solitary kidneys (4%). Vesicoureteral reflux (VUR) was diagnosed in 3 patients (12%); all were of low grade and managed conservatively. After a mean followup of 4 years, RBUS showed compensatory hypertrophy in 41 patients (89%) and two patients (4%) developed chronic kidney disease.

Conclusion: Prenatally detected cases of URA should be promptly evaluated. RBUS is found to be sufficient for diagnosis. However, additional imaging may be indicated for confirming the diagnosis and detection of other associated urinary anomalies. Serial assessment of the contralateral solitary kidney growth and serum creatinine measurement will be helpful to assess kidney function in the long-term.

**AN IN-VITRO AND AN IN-VIVO STUDY OF DIRECT REPROGRAMMING OF**
ASTROCYTES TO NEURONS USING VECTOR-SPECIFIC TRANSCRIPTION FACTORS IN CANINE STROKE MODELS AND HUMANS CELLS

Mohammed Mansi, Andrew Grande, Saleh Baeesa
Ministry of Health, Jeddah, Saudi Arabia.
E-mail: nyc_bluesky@yahoo.com

Methodology: Experiment A: In-vitro a specific canine astrocyte culture protocol was developed using canine meningioma cells transduced with retrovirus free transcription factor first. After realizing that canine cells can be infected by retroviruses those transcription factors packaged retroviruses were then used on mature canine astrocytes harvested from a live animal. Canine cortical astrocytes were cultured in astrocyte medium on poly-I-lysine-coated flasks. Astrocyte transductions were performed at 24-hour post-plating on coated dishes as described or with nucleofection. Transfected cells were cultured in human NSC medium supplemented with EGF, FGF, FBS, horse serum, gultamax, and B27. Cells were then picked for further culturing and some were fixed in 4% paraformaldehyde (PFA) for 10 minutes. Then they were permeabilized with 0.5% Tween-20 in PBS and then exposed to 0.1% Tween-20 with 10% horse serum. We incubated the cells with primary antibodies overnight and with secondary antibodies for 1 hour when unconjigated primary antibodies were employed. The transcription factor was prepared from a DNA prep done on bacterial cultures.

In-vivo, a pterional craniotomy on the canine stroke model was performed. The internal carotid artery and the middle cerebral artery were then identified. Coagulation was done to the middle cerebral artery distal to the lenticulostriate vessels to preserve them. After developing a stroke in these animals, a neurological examination was done to determine the extent of the deficit. Later, they were injected with the same vectors used in vitro. Observation is made to their neurological status and the progression in the resumption of the neurological functions lost. Euthanization is carried out later on those animals when the experiment is complete few weeks later.

Experiment B: An in-vitro experiment including the usage of AAV in transducing HPCs and HAs using three different AAVs known from in literature AAV8, AAV9 and AAV10 to be the most potent candidates in successfully transducing HAs using the same protocols used in the canine experiment.

Results: AAV8 were highly specific transducers in-vitro to HA and HNPCs followed by AAV9 and AAV10 respectively. AAV viruses were found to be a superior candidate to the transduction of both human and canine astrocytes with robust transduction results.

Conclusion: AAV8 was found to be the best candidate for the transduction of canine and human astrocytes followed by AAV9. Further experimentation, neurophysiological and behavioural testing needs to be done on those two species using different transcription factors. Moreover, further testing on non-human primates should also be done in vitro and in vivo.

Keywords: Retrovirus, AAV8, AAV9, AAV10, Transduction, transcription factors, stroke model, canine, human astrocytes, neurons.

Abbreviations: HPC, human progenitor cells; HA, Human astrocytes; AAV, Adeno-associated viruses; NSC, Neuronal stem cell; DNA, Deoxyribonucleic acid

SPONTANEOUS RESOLUTION OF GROSS HAEMATURIA IN ADOLESCENT WITH NUTCRACKER SYNDROME: CASE REPORT AND REVIEW OF LITERATURE.

Nader Al Dossary, Mohamed Gomha, Elsawi Medani, Zakaria Al-Safran
Urology Department, Radiology Department, King Fahd Specialist Hospital, Dammam, Saudi Arabia.
E-mail: virucide@gmail.com

Nutcracker syndrome is a rare cause of left-sided haematuria. Spontaneous resolution of severe haematuria due to this phenomenon is rarely reported in adolescents and adults. Here, we are reporting a case of severe recurrent macroscopic haematuria due to nutcracker syndrome that was completely resolved spontaneously; and we reviewed related literature.
Methods: We identified an adolescent with gross haematuria due to nutcracker syndrome that spontaneously resolved. We reviewed the medical record of the case as well as related literature.

Results: A 16-year-old Saudi male presented with recurrent gross haematuria and left flank pain for several weeks. Vital signs were stable and physical examination was unremarkable. Haemoglobin was 13 mg/dL. Renal function and coagulation profile were normal. CT showed compression of the left renal vein between the superior mesenteric artery and aorta with big collateral veins. Phlebography of left renal vein with pressure measurement showed a pressure gradient of 2 mmHg across the stenotic area with many big collateral dilated veins. Cystoscopy showed haematuria from left ureteric orifice. After few months of conservative management, the patient’s haematuria spontaneously subsided and continued to be haematuria-free for 39 months at last followup. Literature review showed that spontaneous resolution of macroscopic haematuria due to nutcracker syndrome in pubertal/adult patients is rarely reported and the factors affecting this resolution are not clear.

Conclusion: Spontaneous resolution of severe haematuria due to nutcracker syndrome in adolescents is possible. Development of big collaterals on phlebography with a normal/near-normal pressure gradient in the left renal vein across the site of obstruction may be predictor factors of this resolution.

SPONTANEOUS RESOLUTION OF STAGHORN CALCULI: TWO CASE REPORTS AND REVIEW OF LITERATURE

Irfan S. Khan, Nader Aldossary
Department of Urology, King Fahad Specialist Hospital - Dammam, Eastern Province, Saudi Arabia.
E-mail: virucide@gmail.com

Introduction: Disappearance of staghorn calculi without any prior surgical or medical interventions is a rare occurrence. We are hereby reporting two cases.

Materials and methods: Two cases of disappearance of previously documented staghorn calculi were identified. Their medical records were reviewed with regards to presentations, imaging, treatment received and outcome. A review of previous similar English literature was conducted.

Results: The first case was a 40-year-old male patient who was rendered quadriplegic following a cervical spine injury due to RTA. He was found to have bilateral staghorn calculi on CT after presenting with UTI. He had a split renal function of 68% on the left and 32% on the right. He was initially treated with ciprofloxacin for 5 days. Thereafter, he was kept on nitrofurantoin prophylaxis while awaiting PCNL, which was done after one month. Intra-operatively, nephroscopy including all the calyceal system showed no evidence of calculi. This was confirmed on subsequent CT scan.

The second case was a 55-year-old male patient who was otherwise fit and well. He was diagnosed with a left-sided complete staghorn calculus. His urine culture showed recurrent Proteus mirabilis growth, which was treated according to sensitivity until a negative culture was obtained. Following that, he underwent left PCNL. Similarly, intra-operatively, the stone size was significantly smaller (reduced by around 80%). Moreover, the remaining part was soft and friable and easily sucked.

Conclusion: Resolution of staghorn calculi without intervention or complete reversal of lithogenic factors such as immobility or urine chemistry is an unusual phenomenon that is yet to be explored. This, however, should not discourage active intervention as a standard treatment.

BILATERAL PATELLAR TENDON RUPTURE: A CASE REPORT

Homod AlGashim, Hassan AlMoallem, Naif AlShahrani, Abdullah Aljuid
Salman Bin Abdulaziz University, Riyadh, Saudi Arabia.
E-mail: naif1982@gmail.com

Bilateral patellar tendon ruptures are extremely rare to see, especially in young healthy patients without systemic diseases. A case of bilateral simultaneous patellar tendon rupture in a healthy athlete, 35-year-old adult male, after sport injury in absence of systemic disease or steroid usage, both tendon disruptions are in proximal mid substance of the patellar tendon. The patient was operated bilaterally for his ruptures.

Introduction: Bilateral patellar tendon rupture is a rare case to see, with approximately 22 reported cases in the Medline literature in the last 10 years. It is thought to be associated with systemic disease such as rheumatoid arthritis, lupus erythematosus, hyperparathyroidism and diabetes mellitus. In addition, long-term micro-trauma and corticosteroid use may also contribute to it. Bilateral ruptures in the absence of systemic disease or corticosteroid use are accounting for only a small percentage in the literature.[1]

The aim of our study is to present a case of bilateral rupture of the patellar tendon in a young athlete male who used to participate in sport activity with no history of previous medical diseases.
ACCURACY OF RADIOLOGICAL IMAGING IN THE STAGING OF RECTAL CANCER AFTER NEOADJUVANT CHEMORADIATION

Ohoud Alamoudi, Nasser Alsanea, Luai Ashari, Samar Alhmoud, Alaa Abduljabbar, Hana’a Alhmoud
King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: oalamoudi3@gmail.com

Aim: Estimate the accuracy of radiological imaging in the staging of rectal cancer after neoadjuvant chemoradiation.

Methods: This is a prospective study of patients who underwent neoadjuvant chemoradiation followed by curative radical surgery for rectal cancer between 2009 and 2010. The histopathological stage for each patient was compared to the radiological stage determined with Computed Tomography (CT), Magnetic Resonance (MRI), Endorectal Ultrasound (ERUS), and whole body Positron Emission Tomography Computed Tomography (PET-CT) after neoadjuvant chemoradiation.

Results: A total of 99 patients were recruited; 99, 93, 89 and 68 patients underwent CT, MRI, PET-CT and ERUS respectively. When compared to the pathological stage, the accuracy for the depth of invasion (T) stage after neoadjuvant chemoradiation treatment on CT, MRI and ERUS was 64.6%, 64.8% and 60% respectively. The difference was not significant. The accuracy for the lymph node stage (N) on CT, MRI, PET-CT and ERUS was 59.6%, 56.7%, 58.8%, 37% respectively. ERUS was significantly the least accurate.

Conclusion: After neoadjuvant chemoradiation, ERUS has the least accuracy with regard to the N stage, while MRI did not show superior accuracy with regard to both the T and N stages.

BEHAVIOUR OF SURGEONS AND PATIENTS TOWARDS PREOPERATIVE SMOKING CESSION

Reem M. AlAhmadi, Shahad M. AlMohanna, Sara M. AlHilali, Waseem Hajjar
King Saud University, Riyadh, Saudi Arabia.
E-mail: reem.m.alahmadi@gmail.com

Introduction: Smoking is a well-known risk factor for pre-operative complications. Quitting smoking prior to surgery helps overcome those complications.

Problem: Surgeons’ attention for educating the patients about the importance of smoking cessation prior to surgery is one of the most effective ways to reduce smoking-related surgical complications. The extent of advised patients by their surgeons has not been identified.

Methods: A comparative cross-sectional study was conducted in 2013 including eligible patients in King Khalid University Hospital (KKUH). Simultaneously, 69 surgeons were included. All participants’ data were randomly collected and analyzed using Chi-square analysis.

Results: The frequency of smokers is more in surgical patients (37.5%), while, (12.5%) and (8.3%) were ex- and passive smokers and it demonstrated increased risk (p = 0.001) when comparing with non-surgery group. Most of the surgical patients agreed to quit smoking before surgery (95.3%), 58.8% patients said that they got advised from their treating surgeons to stop smoking before surgery. Concerning the surgeons, a total of 66 non-vascular and non-paediatric surgeons responded to the questionnaire (response rate: 22.83%). Majority of the surgeons (60.9%) were interacting with patients who smoked. With regard to smoking cessation, (69.6%) surgeons have advised to stop smoking for more than two weeks before surgery. More than one-half of surgeons (53.6%) believed that patients quit smoking after pre-operative smoking cessation advice.

Conclusions: The surgeons and patients who participated in this study were aware that smoking cessation improves outcomes, but most of the surgeons did not provide brief advice about time duration to stop smoking.

PATIENTS’ PREFERRED METHOD OF EDUCATION IN OPHTHALMIC CARE IN SAUDI ARABIA

Sara Mohammed AlHilali, Abdulrahman AlMuammar, Eman AlKahtani, Rajiv Khandekar
King Saud University, Riyadh, Saudi Arabia.
E-mail: saraalhilali@gmail.com

Background: Educating patients about their diagnosis and plan of care is essential in all fields of medicine, including ophthalmology, where lack of patient engagement could result in irreversible blindness. In order to develop effective patient educational interventions, we need to understand their preferred method of education.

Objectives: To better understand the education preferences of patients in ophthalmic care.

Methods: Patients visiting the Ophthalmology clinics in King Khaled Eye Specialist Hospital were interviewed, in the month of December 2014. Questions were formulated to explore the preferred method of education, correlating its demographic profile and ophthalmic subject. Descriptive statistics were utilized to analyse the data.

Results and discussion: Out of the 143 participants, 57.3% (n = 82) were females. The majority (n = 112; 78.3%) listed “an ophthalmologist” as their current primary source of information regarding their eye
condition. Out of eight topics, 30% of participants (n = 43) were interested in dry eye. The top four educational methods preferred by patients are as follows; one-to-one session with eye care provider (n = 83; 58%), an application on a smart phone (n = 29; 20%), website recommended by eye care provider (n = 23; 16%), group session with eye care provider (n = 20; 14%). Protocols to guide the development of patient-centered educational interventions and materials in ophthalmic care should refer to the results of this study.

Conclusion: Majority of patients prefer one-on-one session with an eye care provider.

LAPAROSCOPIC EXCISION OF A GIANT CYSTIC ADRENAL LYMPHANGIOMA: A CASE REPORT

Turki Alnuzha, Bachar Raad, Mohammed Elmi, Ayman Arbaeen
King Fahd Hospital, Medinah, Saudi Arabia.
E-mail: dr.turki.alnuzha@gmail.com

Cystic adrenal lymphangiomas are very rare benign lymphatic neoplasms. They are believed to arise from vascular malformation of the lymphatics. They are usually large, well-circumscribed, multiloculated cystic spaces lined by endothelium containing a connective tissue component that are discovered incidentally most of the time during clinical and diagnostic workup for unrelated reason. Its incidence in autopsy series varies between 0.064% and 0.18%.

We report a case of a 52-year-old lady who was evaluated for lower abdominal pain. During her radiological workup, the CT showed a large 13 x 11 x 12 cm left adrenal cystic neoplasm, which was excised laparoscopically. Postoperative pathological findings were consistent with lymphangioma. Cystic lymphangiomas may mimic other adrenal neoplasms and must be kept in mind in the clinical and radiologic differential diagnosis of cystic adrenal lesions.

We present this case for the rarity of this condition and the small number of cases managed by laparoscopy as literature review showed.

LAPAROSCOPIC SLEEVE GASTRECTOMY AS A SOLO PROCEDURE FOR THE MANAGEMENT OF MORBID OBESITY: A CASE SERIES WITH 6-YEAR FOLLOWUP

Adnan B. Mofti, Zuheer Akilan, Yazeed Alofisan
Security Forces Hospital, Riyadh, Saudi Arabia.
E-mail: Dr-yazeed@hotmail.com

Background: Laparoscopic Sleeve Gastrectomy (LSG) is a surgical procedure, which is being widely used as a treatment modality for morbid obesity.

Objective: To report our results [estimated body weight loss, mortality and morbidity, and comorbidity improvement] in 2161 LSG patients as a solo procedure for management of morbid obesity.

Methods: Data from a prospectively maintained database of patients who underwent LSG, under the direct care of a single surgeon (ABM), from May 2005 to November 2013 in Security Forces Hospital and Specialized Medical Center Hospital in Riyadh were analyzed. Quantitative variables were expressed as mean (range) and qualitative variables were expressed as percentages.
**Results:** Of the 2366 patients, 1683 (71.2%) were females and 683 (28.8%) were males, with a mean age of 34.8 (11 - 68) years. Pre-operative mean BMI was 40.8 (33.6 - 82.2) kg/m². The most common co-morbidities were type 2 diabetes (50.6%, of which 23.2% were insulin dependent), dyslipidemia (42.3%) and hypertension (32.1%). On average, excess weight loss along the 6-year period was, year by year, 72.3%, 68.7%, 68.1%, 65.4%, 64.2% and 62% respectively. Co-morbidities were completely resolved or markedly improved in 87.4% of diabetics, 73.6% of hypertensive patients and in almost all obstructive sleep apnea sufferers. Complications (early and late) occurred in 121(5.1%) patients, but no mortality was observed.

**Conclusion:** LSG produced consistent EBWL with low morbidity and mortality compared to other modalities in weight reduction surgery; therefore, LSG is a reasonable choice for the treatment of morbid obesity patients and their co-morbidity conditions.

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**OTHER SPECIALTIES**

**ACUTE HAEMORRHAGIC OEDema WITH EXTENSIVE TRUNK INVOLVEMENT AND RHINovIRUS INFECTION ASSOCIATION**

Abdurrahman Ibrahim Almurayshid
Salman Bin Abdulaziz University, Riyadh, Saudi Arabia.
E-mail: almurayshid@gmail.com

A rare form of leukocytoclastic vasculitis with unknown aetiology. There are various associations as possible triggers, most notably infections. Classic presentation is a child who is less than 2 years of age with fever, targetoid purpura and oedema. Acral involvement with sparing of the trunk is classic. The course of the illness is benign with complete resolution. Our patient had classic triad of fever, purpura and oedema; however, with unusual extensive trunk involvement. We report Rhinovirus infection association evident by positive PCR which may be the trigger for his AHEI. He had complete resolution within 3 weeks without complications. Steroid was given for 1 week initially without significant improvement then discontinued, and only supportive treatment continued.

**COMPARATIVE STUDY OF THE PREDICTIVE ACCURACY OF BONE SCAN AND CT SCAN IN DETECTING BONE METASTASIS IN BREAST CANCER PATIENTS**

A. Ghoneim, N. Batawil
King Abdulaziz University Hospital, Jeddah, Saudi Arabia.
E-mail: aliaa.g@hotmail.com

**Introduction:** Bone scan and CT scan are commonly used to assess bone metastasis in breast cancer patients. The purpose of our study is to compare the predictive accuracy of bone metastasis detection between bone scan and CT scan according to the site.

**Methodology:** A total of 156 breast cancer patients referred for initial staging or followup at King Abdulaziz University Hospital in Jeddah were included in the study. All patients had bone scan and CT scan done 1 month apart at the most.

**Results:** Bone metastasis was detected in 52 patients (33.3%). Total metastatic sites were 172, bone scan detected 155 lesions while CT detected 119. The positive predictive value of bone scan in detecting metastasis at the ribs was 96% (compared to 57% in CT), 100% at the pelvic bone and cervical spine (compared to 63% and 58% in CT respectively). CT scan performance was superior at the sternum and thoracic spine (PPV 93%, 92%, compared to 73% and 84% for bone scan).

**Conclusion:** In breast cancer patients, the accuracy of bone scan and CT scan in detecting skeletal metastasis is different according to the site of bone metastasis.

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**OBJECTIVITY IN SUBJECTIVITY: HOW FAR DOES THE SUBJECTIVE ASSESSMENT PREDICT THE OBJECTIVE ASSESSMENT IN CLINICAL SKILLS?**

A’man Talal Inayah, Mohammad Abrar Shareef, Haifa Mazen Alkabbani, Alhanouf A. Alzahrani, Adam Subait Obad, Muhammed Zafar, Nasir Ali Afsar
College of Medicine, Alfaisal University, Riyadh 11533, Saudi Arabia.
E-mail: atinayah@yahoo.com

**Introduction:** Peer- and self-assessments (PA, SA) have shown conflicting results as assessment tools, however, still considered to play important role in student’s development.[1,2] This study aims to explore relationship between PA, SA, examiners’ subjective assessment (ESA), and scores in objective structured clinical examinations (OSCE).

**Methods:** A short Likert-scale questionnaire[3] was distributed among second-year students (n = 164) taking a clinical skills course during their practical sessions. Each student was evaluated by a random selection of peers as well as by him/herself. A Mid-Term OSCE and a final OSCE were conducted where students were assessed by examiners both objectively and subjectively (for confidence and well-preparedness). Correlations (Pearson’s) and predictions (linear regression) were calculated.

**Results:** The final OSCE scores are predicted by ESA (perceived-confidence and well preparation) (p < 0.001, OR = 8.82, 95% CI: 7.24 -10.40) and Mid-Term...
OSCE \((p = 0.001, OR = 0.10, 95\% \text{ CI: } 0.04 - 0.16)\). However, OSCE scores do not correlate with SA or PA. Nevertheless, students’ SA and PA correlate with their confidence \((r = 0.207, p = 0.008, r = 0.185, p = 0.018)\) and preparedness at the final exam \((r = 0.234, p = 0.003)\).

**Conclusions:** Mid-Term OSCE and ESA are good independent predictors for the students’ final objective assessment. SA and PA during the course do not correlate with the OSCE scores but correlate with ESA.

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**PSYCHOLOGICAL AND BEHAVIOURAL PROBLEMS AMONG ADOLESCENTS IN QASSIM REGION (KSA)**

Basil Lafi Al Tami, Nasser Saleh Alwashmi, Malik Al-Shayban, Abdullah Ahmed Al-Hudeeb, Rakan Al-Megbel, Mohammed Nasser Al-Harbi, Mohammad Motleq AlRasheedi

Medical students at Qassim University (KSA).

E-mail: bassel-15@hotmail.com

**Brief statement:** Adolescence is a time when individuals make many choices and engage in a wide range of behaviours likely to influence the rest of their lives. Identifying their problems and providing help is the main concern of this research.

**Objectives:** To identify the psychological and behavioural problems among adolescents and the effect of these problems on their lives and the community around them.

**Methodology:** Cross-sectional study carried out among adolescents in Qassim region. Study subjects are randomly selected from schools. The results are compared with adult subjects to exclude common problems.

**Results:** The research showed that more than one-half of the samples is suffering from at least one problem. 53% of adolescents said that there is no parental monitoring. Sleep issues were prevalent with over 43% of adolescents who slept irregularly and late. School and family issues are also significant on the research.

**Conclusions:** According to the results of the research, adolescents suffer from problems that affect their lives and the community around them. Management of these problems is needed to control it and help adolescents to improve their life style and community.

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**SUGAR CONSUMPTION AMONG THE SECOND YEAR MEDICAL STUDENTS IN IMAM UNIVERSITY, SAUDI ARABIA, RIYADH CITY 2012**

Mohmmad Al-Mutiriy, Raed Al-Ahmari, Yazeed Alkhalifah, Emad Al-Harthy

Medical Students, Imam Mohammed Ibn Saud University, Riyadh, Saudi Arabia.

E-mail: m.th.a@hotmail.com

**Introduction:** Sugar consumption without awareness of its potential danger and its complications is also one of the health problems in the world and in Saudi Arabia. Sugar is loaded into soft drinks, fruit juices, energy drinks and hidden in almost all processed food. Sugar consumption leads to health problems such as obesity, teeth decay and others. Sugar consumption is spread among medical students in Imam University. Our study is to evaluate the awareness of normal level of sugar in the body, the most sources of sugar consumed, relationship between sugar and dental health, relationship between sugar and obesity and awareness about the products of sugar in market.

**Method and material:** Sampling unit is the second year medical students of Imam University. Data collection tools are self-reported questionnaires. Sampling type is randomization. The research team composed of six medical students. 100 questionnaires are distributed. For data analysis and entry, we used SPSS version 20. SPSS is used to calculate the measurement of central tendency, measurement of dispersion, also we constructed some tables and graphs.

**Results:** 100 questionnaires are filled and received from the second year medical students of Imam University. The mean age of study is 20 and the standard deviation is 1.93. 36 of these students did not know the normal amount of sugar in the body. For the most consumed products, 19 students out of 53 had soft drinks. In the age group of twenty, 31 out of 53 reported having good teeth, which is not excellent nor bad. Also 15 out of 100 questionnaires consuming sugar daily, their weight is (greater than 91). 39 out of 100 questionnaires who consume soft drinks daily said that they engage in physical activity sometimes. 44 out of 53 from 20-year-old students said that they did not read the labels. 26 out of 53 from 20-year-old students said if the product is clear of sugar, they are less likely to buy, and 8 out of 53 said they are more likely to buy (for more details, see table 10, graph 10 and for 100 questionnaires).

**Conclusion:** From our study, we found that most sugar-containing products are very accessible for any person without regulations. Most of medical students have no idea about normal level of sugar in the body, also they are not interested to read labels of products. Medical students suffer from problems in the teeth, obesity and others. We recommend the students to read the labels of products, to have daily physical activity, to improve the awareness about the impact of sugar on health, to care about the health of teeth and to avoid drinking more soft drinks.
**COMPARISON OF WHOLE LIVER WITH SINGLE AND MULTIPLE ROIS OF HEPATIC STEATOSIS**

M. A. Alkubeyyer, H. Alomaish, B. Aljoaid
King Khalid University Hospital, Riyadh, Saudi Arabia.
E-mail: dr.hasan87@yahoo.com

**Aims and objectives:** To compare hepatic fat fraction of the whole liver perimeter with single and multiple regions of interest (ROI).

**Methods and materials:** Ten volunteers with variable hepatic steatosis were scanned with 1.5 T MRI. Two readers blinded from each other’s results estimated the percentage fat fraction using open-source software, Fiji. Both readers traced the whole liver at the most dominant axial slice near the level of right portal vein and also placed three 2 cm diameter circulars at multiple ROIs within the liver. The first reader has repeated the measurement after a two-week interval. Inter-observer and intra-observer variabilities were assessed using Bland-Altman Analysis.

**Results:** Bias and 95% limits of agreement between reader1 and reader2 were -0.07% [-0.7, 0.57] for tracing whole liver and 0.46% [-1.89, 2.81] for estimating mean value of the three ROIs. Bias and 95% limits of agreement between two sessions by reader1 was 0.091% [-0.396, 0.59] for tracing whole liver and was -0.581% [-2,14, 0.96] for estimating the mean value of the three ROIs. Bias and 95% limits of agreement between whole liver tracing and the mean of the three ROIs for reader1 was 0.245% [-1.95, 2.44].

**Conclusion:** Good agreement of fat fraction estimation by tracing whole liver, and placing small ROIs in liver. Although tracing the whole liver showed the least inter-observer and intra-observer variability, the mean estimation time was longer, 4.1 minutes compared to 10 seconds.

**EFFICACY AND SAFETY OF PIPERACILLIN-TAZOBACTAM VERSUS CEFOXITIN FOR BACTERIAL INFECTION PROPHYLAXIS IN PATIENTS UNDERGOING PLASMAPHERESIS PRIOR TO RENAL TRANSPLANTATION**

Hibah Al Ruwaisan, Delal Alkortas, Khalid Al Meshari, Ahmed Al-Jedai
Department of Pharmacy, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
E-mail: halruwaisan@kfshrc.edu.sa

**Aim:** Desensitization using plasmapheresis allows successful transplantation of ABO incompatible and highly sensitized patients, but increases the risk of infection due to immunodeficiency, invasive procedures, and immunosuppressant use. At KFSH&RC, all kidney transplant patients undergoing desensitization receive piperacillin/tazobactam as prophylaxis during plasmapheresis. Recently, this was changed to cefoxitin to control wide-spectrum antibiotic use. The purpose of this study is to compare efficacy and safety of pip/tazo versus cefoxitin in those patients.

**Method:** This is a retrospective, observational study that includes all kidney transplant patients who received pip/tazo or cefoxitin during plasmapheresis from 2004 to 2014 matched in a 2:1 ratio. The primary endpoint is microbiological evidence of infection within 30 days from the last plasmapheresis. Secondary endpoints include clinical evidence of infection, resistance to pip/tazo, MDR, fungal or C. Difficile infection, hospitalization, mortality and drug-related adverse events. Exclusion criteria include other antibiotic use, active infection, immunoadsorption and primary graft non-function.

**Results:** An interim analysis of 33 patients shows comparable baseline characteristics. Cefoxitin shows a non-statistically significant trend towards higher infections (microbiologically) at 30 days compared to pip/tazo (45.5 % vs. 31.8%, p = 0.443). There was no statistically significant difference between the two groups in all secondary outcomes including: clinical evidence of infection (36.4% vs. 40.9%, p = 0.801), MDR infections (27.27% vs. 18.18%, p = 0668), resistance to pip/tazo (33.3% vs. 11.11%, p = 0.292), fungal infection (9.09% vs. 0%, p = 0.151), hospitalization (16.6 ± 3.55 vs. 16.2 ± 3.18, p = 0.713), and adverse events. No C. Difficile infection or mortality was reported.

**Conclusion:** Since this is an interim analysis, no final conclusion can be obtained and large randomized controlled trials are required to confirm these findings.

**UNDERGRADUATE MEDICAL RESEARCH IN SAUDI ARABIA: A NEED FOR REBUILT IN RESEARCH INFRASTRUCTURE**

Al-Faisal University, Riyadh, Saudi Arabia.
E-mail: imuhsen@alfaisal.edu

**Background and objective:** Saudi Arabia has started investing heavily in areas of education, health and technology, yet it is still lagging behind in terms of biomedical research. Evidence has shown that one major factor is the under-prepared workforce. This
research aims to evaluate areas of weaknesses in research skills of Saudi’s medical students.

**Methodology:** A multi-institutional cross-sectional study surveying 70 research mentors (academicians, basic, and clinical researchers) from universities, teaching hospitals and research center in Riyadh. The mentors were asked to evaluate, on a 5-point Likert scale, how deficient they think medical students are in a set of 40 competencies covering areas of basic, clinical/epidemiological, general research and biostatistics skills.

**Summary of results and discussion:** Results have shown that students are deficient in all presented competencies; with a mean Likert score ranging from (3.3 to 4.3). Moreover, results showed that the students are most deficient in basic research skills followed by clinical research skills.

**Conclusions and take home message:** Enhancing medical curricula to include better research training for medical students should be a part of Saudi Arabia’s strategy, as the results suggest that medical students are deficient in all research competencies presented. Furthermore, the involvement of other stakeholders, such as students and educators, will take place for a better analysis of the problem.

**UNDERGRADUATE MEDICAL RESEARCH COURSES ADAPTING TO THE DEMANDS OF 21ST CENTURY**


Al-Faisal University, Riyadh, Saudi Arabia.
E-mail: jsarraj@alfaisal.edu

**Background and objective:** Despite evidence indicating a general decrease in the quality of medical research, physician scientists and clinical researchers, research integration in medical curricula is still ineffective. Thus there is a need to develop well-structured research courses that are able to promote research.

**Methodology:** A multi-institutional cross-sectional study surveying research mentors in universities, teaching hospitals and research centers in Saudi Arabia. The mentors were presented with competencies and asked to rate the importance (Likert scale) and mode of delivery, then to determine the best training style and assessment method for different research fields.

**Summary of results and discussion:** The results have shown the following:

1. All the competencies included were important, with a mean Likert score range from 3.4 - 4.8.

2. Using a combination of modes of delivery (passive and active) in training for general research skills and biostatistics.

3. Using both performance and knowledge based approaches for assessment.

4. “General research skills” and “Biostatistics” should be taught compulsorily.

**Conclusions and take home message:** The results show the importance of effective integration of research in medical curricula, while recommending change of traditional delivery and assessment methods to a more active and performance based. The results of this research can help curriculum developers in creating better research courses in terms of content and delivery.

**PREVALENCE OF GLAUCOMA IN PATIENTS WITH OBSTRICTIVE SLEEP APNEA AT KING ABDULAZIZ UNIVERSITY HOSPITAL**

Bagabas Nahlah, Ghazali Wafaa, Mukhtar Mariam, Maniyar Ashfaque, Badeeb Osama, Wali Siraj

National Guard Hospital, Jeddah, Saudi Arabia.
E-mail: dr.bagabas@hotmail.com

**Introduction:** Obstructive sleep apnea (OSA) is a sleep-disordered breathing syndrome that has been associated with certain eye diseases such as glaucoma. It makes the eye vulnerable by the direct effect of hypoxia or indirectly by impaired autoregulation of optic nerve perfusion.

**Objectives:** Determine the prevalence of glaucoma among OSA patients and the association between the severity of OSA based on the apnea-hypopnea index (AHI) and the measures of glaucoma.

**Methodology:** 48 patients participated in the study with AHI ≥ 10. They underwent first-visit examinations: Intraocular pressure measurement, anterior eye segment and fundus examination. Glaucoma-suspected patients underwent second visit examinations: Visual field test, assessment of retinal nerve fiber thickness, central corneal thickness. All patients on corticosteroids were excluded.

**Results:** 6 patients out of 48 confirmed to have glaucoma with estimated prevalence of 12.5%. Patients’ age, gender, sex, BMI, DM, HTN, AHI, cup-to-disc ratio changes, IOP and visual field changes of both eyes showed no statistically significant relation to the risk of developing glaucoma.

**Conclusion:** Prevalence of glaucoma among OSA patients presented to KAUH is common and it is similar to that reported in other communities. However, it appears there is no significant association between glaucoma and AHI.
EVALUATING THE EFFECTIVENESS OF MEDICAL TEXTBOOKS AS AN UNDERGRADUATE LEARNING RESOURCE

Ahmed Jamal Eldeib, Omar Jamal Eldeib, Ayman Mohamed Awad, Akef Obeidat
Al-Faisal University, Riyadh, Saudi Arabia. E-mail: oeldeib@alfaisal.edu

Medical textbooks historically were and still are an important tool for medical education, yet their effectiveness has not been evaluated. In this study, we evaluate how medical textbooks target the different domains of learning (cognitive and affective) and the effectiveness of the different tools employed. This study was designed to be a cross-sectional, survey-based study where the subjects (n = 251) would autonomously rate effectiveness of textbooks using a 5-point Likert scale. Chi-squared, Spearman’s correlation and Kruskall-Wallis test(s) were used in the analysis. Results showed that textbooks are effective in addressing cognitive and affective domains with recalling and comprehension being the most effectively addressed subdomains. The behaviour of usage of textbooks was found to modulate their degree of this effectiveness. Moreover, from among all tools utilized by textbooks, students rated diagrams and graphic elements most effective, and graphic elements were shown to significantly provide special benefits to medical students when they get exposed to new environments (first exposure to medical school, first hospital exposure). Moreover, end of chapter questions and summaries were shown to provide a significantly higher benefit to female students in comparison to male students (p < 0.01). We conclude that textbooks are generally still effective and student and/or demographic factors might modify this effectiveness.

MISCONCEPTION ACKNOWLEDGE ABOUT VITILIGO AMONG POPULATION IN THE WESTERN REGION, SAUDI ARABIA

Rakan Aldhahri, Mohammad Fatani
King Abdulaziz University Hospital, Jeddah, Saudi Arabia. E-mail: rakan-mansur@hotmail.com

Background: Vitiligo is the most common depigmentary disorder of the skin and hair. Our community lacks knowledge about vitiligo. Our aim is to evaluate the knowledge, attitude and misconception about vitiligo among adults.

Methods: Cross-sectional study done in March 2014. A questionnaire was utilized for data collection.

Results: The study included 423 subjects. Females represent 70% of them. 6.9% of the participants are well aware about vitiligo. Social media (32.2%) was the commonest source of information. Knowledge about vitiligo was sufficient among 41.8% of the participants. Females had higher significant knowledge score compared to males, older subjects (31 - 50 and >50 years) had higher knowledge score compared to younger subjects (18 - 30 years) which showed statistical significance. Those reported hearing well about vitiligo had higher significant knowledge score compared to those who did not. Overall attitude towards vitiligo among participants was positive among 57.4% of them. Those reported having heard of vitiligo had higher significant attitude score compared to those who did not.

Conclusion: Knowledge of the public, especially adults regarding vitiligo is suboptimal. However, attitude towards the disease is generally acceptable. Education on vitiligo is a mandate.

DEPRESSION IN PATIENTS WITH COLORECTAL CANCER IN SAUDI ARABIA.

M. Shaheen Al Ahwal1, F. Al Zaben, D.A. Khalifa, M.G. Sehlo, R.G. Ahmad, H.G. Koenig
Ministry of Health, Makkah, Saudi Arabia. E-mail: rami_hafiz@yahoo.com

Objective: Persons with colon cancer experience considerable psychological stress due to physical and social changes brought on by illness, increasing their risk of depressive disorder (DD). We examine the prevalence of DD and depressive symptoms and determine baseline demographic, social, psychological and physical health correlates.

Methods: A convenience sample of 70 cancer patients in Jeddah, Saudi Arabia, was screened for DD using an abbreviated version of the Structured Clinical Interview for Depression (SCID) and for depressive symptoms using the Hamilton Depression Rating Scale (HDRS). Demographic, psychosocial, psychiatric, and physical health characteristics were also assessed, along with past treatments for colon cancer. Bivariate and multivariate analyses identified predictors of DD and symptoms.

Results: The 1-month prevalence of DD was 30.0% (12.9% major depression, 5.7% minor depression, and 11.4% for dysthymia) and significant depressive symptoms were present in 57.1% (HDRS 8 or higher), including having persistent suicidal thoughts for 2 weeks or longer within the past month (14.3%). Low social support and having a co-morbid psychiatric illness (particularly anxiety) independently predicted DD based on the SCID. Saudi nationality, poor financial situation, low social support and co-morbid psychiatric illness independently predicted depressive symptoms on the HDRS. Surprisingly, stage of cancer, duration of cancer and treatments for cancer were unrelated to DD or depressive symptoms.
Conclusions: DD and significant depressive symptoms are common in patients with colon cancer in Saudi Arabia, and are predicted by a distinct set of demographic and psychosocial risk factors that may help identification. Demographic and psychological risk factors were more likely to be associated with depression than cancer characteristics in this sample.


SIGNIFICANCE OF DILATED PULMONARY ARTERY ON COMPUTED TOMOGRAPHY: RETROSPECTIVE STUDY

Al Harbi Sara, Sherbini Nahid, Al Amri Nada, Al Raddadi Mosleh
King Fahad Hospital, Madina Al-Munawara, Saudi Arabia.
E-mail: dr.stalharbi@gmail.com

Objectives: Dilated pulmonary artery (DPA) on CT is not rare. Measurement of PA and ratio of PA-to-aorta are sensitive markers. We aim to highlight significance of detecting DPA among inpatients to identify the most frequent causative diseases.

Methodology: We retrospectively reviewed 276 patients with PA diameter > 29 mm and ratio > 1. Demographical, clinical, radiological and echocardiographic data were collected. We tested correlation between DPA and echocardiographic findings.

Results: Prevalence of dilated PA was 9.8%. Age 62 ± 17 years, BMI 26 ± 6 kg/m², female predominated (52%). Causative diseases were heart failure (n: 68, 24.6%), obstructive lung disease (n: 61, 22.1%), ILD (n: 54, 19.3%). They have a recurrent exacerbation 1 - 2/year. ECHO showed mean PASP (43.2 mmHg), dilated RA (35%), EF (61.0 ± 13.1). Correlation between pulmonary hypertension by echo was statistically significant for signs of DPA.

Conclusion: DPA is an important common predictive sign for pulmonary hypertension. Clinicians should be alerted of this finding for patients mandated admissions to investigate for pulmonary hypertension. Identifying the causative diseases and close followup for those patients are important as this may predict higher risk for recurrent admissions.

Keywords: Pulmonary, dilated pulmonary artery

EFFICACY AND SAFETY OF OCTREOTIDE IN THE MANAGEMENT OF POST CARDIAC SURGERY CHYLOTHORAX IN CHILDREN: 11-YEAR SINGLE CENTER EXPERIENCE

Tauhid Ahmed Bhuiyan, Abdulrazag Shaekh Aljazairi, Rayd Abdulaziz Almehizia, Abdullah Hasan Alwadai
King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia. E-mail: tbhuiyan@kfshrc.edu.sa

Background: Chylothorax, following cardiac surgery, is a relatively rare condition in paediatric population with significant morbidity and mortality. Octreotide has questionable efficacy with limited evidence. The current study sought to assess the efficacy and safety of octreotide in this setting.

Methodology: This is a retrospective cohort study of all patients (birth to 18 years) who received octreotide for post cardiac surgery chylothorax. The primary efficacy endpoint is resolution of chylothorax in terms of chest tube drainage (< 2 ml/kg/day).

Results: From January 2003 to August 2014, 38 patients were initially screened. Preliminary data were analyzed on nine patients of whom two were excluded. From the seven patients, majority were male with average age 3 - 10 years. All patients received concurrent nutritional therapy. The mean dose and duration of octreotide: 2.4 µg/kg/hr (continuous infusion), 6.4 days, respectively. Resolution of chylothorax was observed in five patients (71.4%; 1 complete, 4 partial). Two patients (28.6%) did not respond to octreotide therapy that required thoracic duct ligation. None of the patients developed any adverse drug reactions following octreotide therapy.

Conclusion: Based on the preliminary findings, we can conclude that the use of octreotide has a promising benefit in the treatment of chylothorax without any significant side effects.

HIGH-DOSE INTRAVENOUS COLISTIN METHANESULFONATE (CMS) THERAPY IS ASSOCIATED WITH HIGH RATES OF NEPHROTOXICITY: A PROSPECTIVE COHORT STUDY FROM SAUDI ARABIA

1Department of Pharmacy, 2Department of Medicine, 3Division of Infectious Disease, 4Department of Statistics. Prince Sultan Military Medical City, Riyadh, Saudi Arabia. E-mail: wafa.a.f@hotmail.com

Objectives: To assess the rates and risk factors for nephrotoxicity in patients receiving high dose CMS therapy in a tertiary center in Riyadh, Saudi Arabia.

Methods: Prospective, cohort study recruiting patients aged ≥ 18 years who are receiving high dose intravenous CMS therapy over the period from 1 March to 31 August 2013. Patients were excluded if pregnant or are already on renal replacement therapy. Serum
creatinine was monitored at start of CMS therapy and daily up to 7 days after CMS therapy discontinued. Nephrotoxicity was defined as per RIFLE criteria. The primary end-point was nephrotoxicity whilst on intravenous CMS therapy. Secondary end-point was recovery of renal function within 7 days of discontinuing CMS therapy. Statistical analysis was performed using SPSS version 20.0 (IBM, Armonk, New York, USA). Bivariate analyses were performed using Fisher exact tests for categorical variables and the independent sample t-test for continuous variables. All p-values were two-sided.

Results: 101 patients screened, of which 67 met the inclusion criteria. Mean age was 57.48 years and 67.2% were males. Only 31.3% were in an intensive care unit and the average Charlson co-morbidity score was 2.88. 16 patients (23.9%) had renal impairment prior to starting CMS therapy. Patients received an average intravenous CMS dose of 0.11 million units per kg per day for an average duration of 13.76 days. The underlying infections included hospital-acquired pneumonia (53.7%), urinary tract infection (19.4%), bacteraemia (10.4%) and surgical site infection (7.5%). A total of 51 (76.1%) patients developed nephrotoxicity; 19 R, 20 I, 9 F and 3 L. Nephrotoxicity was significantly associated with age and baseline serum albumin. Patients who received intravenous CMS therapy for more than 7 days were significantly more likely to develop nephrotoxicity compared with those who received therapy for 7 days or less (OR 3.7; 95% CI 1.3 - 6.1). Renal function recovered within 7 days in only 22 (43.1%) out of 51 patients who developed colistin-associated nephrotoxicity.

Conclusion: High-dose intravenous CMS therapy is associated with high rates of nephrotoxicity. Age, baseline serum albumin and treatment for more than 7 days are all significantly associated with risk of colistin-associated nephrotoxicity. Renal function recovers within 7 days of stopping CMS in less than half of those who develop colistin-associated nephrotoxicity.
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