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Dengue Fever: A Drain on Health Resources

Masood Anwar

Dengue fever is a very hot topic nowadays, not only among health professionals but among politicians as well. And it is rightly so because since 2010, Pakistan has been experiencing an epidemic of dengue fever that has caused 16 580 confirmed cases and 257 deaths in Lahore and nearly 5000 cases and 60 deaths reported from the rest of the country. The three provinces facing the epidemic are Khyber Pakhtunkhwa, Punjab and Sindh. This year Punjab has reported 2300 cases, of which 50% alone are from Rawalpindi District. In spite of allocation of additional funds it has resulted in draining much of the already meager health resources.

While handling the epidemic a lot of emphasis was on providing indoor treatment facilities including platelet transfusions to as many patients as possible. While doing so important principals of community medicine for dealing with epidemics were largely ignored because of the political pressure on the hospital administrators and doctors.

It is not only Pakistan facing this menace, it is estimated that about 2.5 billion people (over 40% of the world population) are at risk. There are about 50-100 million cases occurring in the population at risk every year. Dengue is transmitted by an Arthropod (mosquito Aedes aegypti) and caused by a Flavivirus infection, the primary host of which are human. Therefore the emphasis for controlling the disease should be on the vector control (mainly Aedes aegypti mosquito) and protection from mosquito bite. This is what the WHO recommends. Obviously the responsibility for vector control rests on Civic bodies and the society itself. In a country where leaking fresh water pipes, broken roads and ditches holding rain water, tyres and pottery shops are abundant with no sense of responsibility for regular garbage disposal and mosquito control, there is abundant space for breading of vector. This is added by underground fresh water tanks, most favorite site for Aedes to breed is in almost every house. The money which is spent upon providing treatment facilities, which are expensive, should be diverted towards improving civic services and creating awareness about the preventive measures, which are far less expensive. Prevention is better than treatment as it also reduces morbidity whereas treatment will only reduce mortality.

The World Health Organization recommends an Integrated Vector Control program consisting of five elements. If these are practiced in an integrated manner, the disease can be prevented. These are:

1. Advocacy, social mobilization and legislation to ensure that public health bodies and communities are strengthened;
2. Collaboration between the health and other sectors (public and private);
3. An integrated approach to disease control to maximize use of resources;
4. Evidence-based decision making to ensure any interventions are targeted

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appropriately; and

5. Capacity-building to ensure an adequate response to the local situation.

This should also be remembered that not every person suffering from fever, body aches and thrombocytopenia is suffering from Dengue. Malaria, especially falciparum malaria which is also caused by mosquito bite and which also occurs in about the same season has similar signs and symptoms. It is essential that all blood slides from suspected patient must be seen by a well-trained technician, if not by a haematologist. I have yet to see a case of falciparum malaria which does not have some degree of thrombocytopenia. Another important differential diagnosis is Chickengunya virus infection. It is also caused by bite of Aedes mosquito and has sign and symptoms very similar to Dengue. Therefore appropriate laboratory diagnosis is also important to establish the diagnosis of Dengue fever.

Even if the diagnosis is confirmed, patient needs not to be admitted in the hospital and if admitted he needs not to be in an isolation ward. Patients of Dengue are best isolated under a mosquito net in the same ward. WHO in 2009 gave new Dengue case definition to facilitate decision regarding indoor management of patients. These are:

A. Dengue without Warning Signs expanded: When there is fever and two of the following:

- Nausea, vomiting
- Rash
- Aches and pains
- Leukopenia
- Positive tourniquet test

B. Dengue with Warning Signs expanded: Dengue as defined above with any of the following:

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation (ascites, pleural effusion)
- Mucosal bleeding
- Lethargy, restlessness
- Liver enlargement >2 cm
- Laboratory: increase in HCT concurrent with rapid decrease in platelet count

C. Severe Dengue expanded: Dengue with at least one of the following criteria:

- Severe Plasma Leakage leading to:
  - Shock (DSS)
  - Fluid accumulation with respiratory distress
- Severe Bleeding as evaluated by clinician
- Severe organ involvement
  - Liver: AST or ALT ≥1000
  - CNS: impaired consciousness
  - Failure of heart and other organs

In (A) hospital admission is not required. Second stage requires close supervision and medical intervention but admission and vigorous treatment is essential in third case. Following WHO guidelines, both for prevention and treatment with strict monitoring and audit will not only substantially reduce the cost of Dengue control but may completely eliminate the disease.

ORIGINAL ARTICLE

Are We Aware of Dengue Fever? A Community Based KAP Survey on Dengue Fever in Rawalpindi

Farah Rashid Siddiqui, Abdul Qadir Usmani, Iffat Atif, S. Hassan Bin Usman, Syed Hammad Haider

ABSTRACT

Objective: To assess the knowledge, attitude and practices regarding dengue fever and its prevention in Rawalpindi

Study Design: A Cross Sectional Survey.

Place and Duration of Study: Community of Rawalpindi, from July to Sept. 2012.

Materials and Methods: A total of 215 participants were selected through consecutive sampling technique. A structured questionnaire was self administered after informed consent was obtained from all the participants. Knowledge of dengue was measured by asking questions related to disease symptoms and preventive measures. Association between knowledge and awareness at $p<0.05$ was accepted as significant.

Results: It was found that the knowledge of the community regarding Dengue fever was adequate (91%). The respondents' awareness about preventive measures for dengue was also satisfactory (88%). A significant association found between knowledge & awareness of dengue fever and preventive measures (P= 0.01). Mass media was identified as an effective tool in raising awareness. However; adequate knowledge about prevention did not reflect in community practices (P=0.031); factors identified responsible for it, were like water storage for domestic use due to water shortage and excessive load shedding.

Conclusion: Local community is well aware about dengue fever and its prevention; however it was found that good knowledge doesn't necessarily lead to good practice. Health educational campaigns should be designed to improve behavior and practices of prevention & control measures against dengue fever.

Key Words: *Dengue fever, Viral hemorrhagic fever, Healthcare. Preventive measures.*

Introduction

Since the beginning of the 21st century, Dengue Fever (DF)/ Dengue Hemorrhagic Fever (DHF) is the emerging most important arboviral disease of humans, occurring in tropical countries of the world where >2.5 billion people are at risk of infection. [1,2] It is still endemic in 112 countries around the world and DHF has been documented in >60 of these countries. [3]

At the beginning of the 21st century it is estimated that between 50 -100 million cases of DF and several hundred thousand cases of DHF occurred each year, depending on the epidemic activity. The case fatality rate (CFR) varies among countries, but can be as high as 10–15% in some and <1% in others. [4]

Dengue fever (DF) is endemic in Southeast Asia. First major epidemic was reported from Srilanka in 1989. [5] Tropical season, peri-urbinization with ill planned and crowded areas and improper waste water management are supposedly responsible for DF in this region. DHF was found in China, Indonesia, Malaysia, Thailand, some studies have reported its epidemics occurred in India and Bangladesh. [6,7,8,9]

In Pakistan Dengue has been around for the past 20 years. The first documented report was in 1985 [10] whereby Dengue type 2 virus was isolated in a sero-epidemiological study for encephalitis. The first major outbreak was reported in 1994-95, another Epidemic has been witnessed in Karachi following heavy rainfalls in 2006. During the previous two epidemics in Karachi, Dengue fever was more commonly seen in the 20 to 40 years age group [10,11]

Dengue vector control requires effective participation of the local community. [12] Knowledge, attitude, and practice (KAP) surveys provide a suitable format to evaluate existing programs and to identify effective strategies for behavior and

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environmental change in order to control disease effectively. It has been noticed such studies have been relatively rare in dengue research.[13,14]

The present KAP study was done with the aim of assessing knowledge regarding Dengue fever among general population and to assess, whether knowledge of dengue symptoms and preventive measures contribute to better preventive practices.

Materials and Methods

A cross sectional survey was conducted amongst the urban community of Rawalpindi during July – September 2012. A total of 215 participants were selected through consecutive sampling technique. A structured questionnaire was self administered after informed consent was obtained from all the participants. Knowledge of dengue was measured by asking questions related to disease symptoms and preventive measures. Regarding practices, questions were asked about the use of preventive measures against dengue fever. Knowledge of symptoms was defined as the respondent mentioning at least two of the following symptoms: fever, headache, nausea/vomiting, rash, bleeding, shock, or muscular pain. Similarly, the criteria was set that the participants had knowledge of preventive measures if mentioned at least three of the following measures: using a mosquito net, using mosquito repellents, sprays, coils, changing and covering stored water and safe disposal of garbage. Preventive practice was defined as using at least one of the following measures; using mosquito repellent, bed net or mosquito coils, screening on windows/doors, covering stored water for domestic use, checking the flower pots and coolers.

Results

Overall the level of awareness about dengue fever was 91% and awareness about preventive measures was 88% which was found out after interviewing 215 participants. The study population was mainly comprised of adults; Mean age of the population was 28 + 5 years; 66% female and 34% male; 67% of the participants were literate and 33% illiterate. Table I; showed the details of demographic features of the study population and KAP in relation with age, gender, education and socioeconomic status. KAP has been categorized on the basis of the responses in to Poor (one or no correct answer), Fair (at least 2 correct answers), Good (3 > 3 correct answers) about knowledge of symptoms, preventive measures and preventive practices against dengue fever.

About mode of transmission of dengue, 99% of the participants knew that Dengue fever is transmitted through mosquitoes. Regarding knowledge about symptoms of dengue, 89% persons mentioned one symptom (fever), 72% persons specified 2 symptoms (fever, headache), 64% told 3 symptoms of dengue (fever, headache & muscular pain) and 24% specified 4 symptoms (fever, headache, muscular pain and bleeding). Majority of the participants 89% reported that the knowledge and awareness of dengue fever was gained by mass media, TV, radio, internet, pamphlets and newspapers.

Regarding Knowledge about preventive measures of dengue fever majority of the participants 89% were aware of at least one method of prevention (mosquito coil/spray/repellent), 80% knew about 2 preventive measures (mosquito coil/spray/repellent and bed nets), 75% were aware of 3 preventive measures (mosquito coil/spray/repellent, bed nets and safe disposal of garbage), although very few participants 18% were aware of covering and changing clean stored water.

The association between knowledge of dengue and awareness about its preventive measures found statistically significant ($p = 0.01$)

When the participants were asked about the preventive practices they have adopted 55% of them were practicing mosquito coil/spray/repellent on & off, 12% bed nets, 10% safe garbage disposal and only 3% covering stored water for domestic use, checking the flower pots and coolers; 20% of the participants were not practicing any preventive measures. This shows adequate level of awareness about dengue symptoms and preventive measures wasn't successful in changing the practices of the community as preventive practices were poor as compare to knowledge, this finding is statistically significant (p = 0.03).

Table No I: KAP (%ages) in relation to Demographic Features (n=215)

Demographic features	%ages	Knowledge (%ages)	Attitude (%ages)	Practices (%ages)
Age (years)				
<20	12%	Fair	Poor	Poor
21-30	35%	Good	Good	Fair
31-40	32%	Good	Good	Fair
41-50	17%	Good	Fair	Fair
>51	4%	Fair	Fair	Poor
Gender				
Male	34%	Good	Fair	Poor
Female	66%	Good	Good	Fair
Education				
Illiterate	33%	Fair	Fair	Fair
Primary	12%	Fair	Fair	Fair
Matric	20%	Good	Fair	Fair
Intermediate	21%	Good	Good	Fair
Graduate	13%	Good	Good	Fair
Socioeconomic status According to earning /month				
Low (<10,000RS)	25%	Fair	Fair	Poor
Low-middle(10-20,000RS)	35%	Good	Fair	Fair
middle(21-30,000RS)	30%	Good	Good	Fair
Upper-middle(>31,000RS)	10%	Good	Good	Good

Discussion

Although the level of dengue knowledge and awareness about preventive measures of local community was satisfactory, however results of this study showed that this knowledge and awareness wasn't effectively put into practice. The personal preventive practices against dengue control weren't at satisfactory level. The focus should be now to motivate community to adopt the preventive practices against dengue.

Previous studies have reported conflicting results regarding the effects of knowledge on dengue prevention practices. Some studies have shown that dengue knowledge was associated with an effective use of preventive measures against the disease [15,16,17] and a reduced number of development sites for vector larvae.[18] Other studies found a significant reduction in the vector

infestation index after community-based prevention campaigns.[18,19,20] However, studies in Puerto Rico,[21] Brazil,[22] and Trinidad en Tobago [23] that found little or no correlation between knowledge of dengue and levels of preventive measures adopted by the communities, findings of these studies are in line with our results.

Our results indicated a weak association between dengue knowledge and preventive practices adopted by the community. Better knowledge does not necessarily lead to better practice, presumably because it is difficult to change a person's behavior due to multiple social and cultural issues like water storages practices, sleeping outdoor due to load shedding, affordability and lack of resources to adopt preventive measures like covering windows with nets, large container with lids etc.

Adequate knowledge of preventive measures in our study could improve the preventive practices. Mass media play a vital role in emphasizing preventive practices like reducing the numbers of unprotected containers. This suggests that more emphasis should be put on practical ways to prevent dengue in educational campaigns. Although in our study it was not directly associated with better practice however, adequate knowledge of symptoms is important to recognize the severity of dengue at an early stage which can lead to proper case management and saves lives.

Conclusion

It is concluded that the local community is well aware about dengue fever and its prevention; however it was found that good knowledge doesn't necessarily lead to good practice. Health educational campaigns should be designed to improve behavior and practices of prevention & control measures against dengue fever. Intersectoral collaboration is needed between different sectors of life like educational, religious and Municipal Corporation for stressing on adopting preventive measures and distributing low cost preventive material against dengue. Closing the gap between knowledge and practice will remain an important challenge for public health to dengue control.

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ORIGINAL ARTICLE

Comparison of Improvised Ventilating Nasal Packs with Vaseline Gauze Packs in Nasal Surgery

Nasirullah Khan, Mirza Khizer Hameed, Zeeshan Ayub, Muhammad Junaid Alam

ABSTRACT

Objective: To study the outcome of using Improvised ventilating nasal packs compared with Vaseline gauze packs in nasal surgery.

Study Design: A comparative study.

Place and Duration of Study: Department of ENT, Combined Military Hospital Rawalpindi, from July 2011 to December 2012.

Materials and Methods: One hundred and twenty patients undergoing nasal surgery were divided into two groups of sixty each. After surgery, Group A was packed with Improvised Ventilating nasal packs and Group B with Vaseline gauze nasal packs. Effects of nasal packs in both the groups were studied and compared in terms of control of bleeding, comfort level while in place, and discomfort level while packs were being removed.

Results: Patient comfort level was significantly better in Group A as compared to Group B, while there was no significant difference in post operative bleeding control among the two groups. Discomfort level while packs were being removed, was also similar among the two groups.

Conclusion: Ventilating nasal packs provide a better alternative to conventional nasal packs in terms of patient comfort after nasal surgery, while they are as good in providing bleeding control.

Keywords: *Improvised nasal packs, nasal packing, ventilating nasal packs.*

Introduction

Nasal surgery is one of the corner stone's of otorhinolaryngology. In the USA approximately 600,000 patients underwent ambulatory sinonasal procedures in 2006 for various nasal conditions.[1] The foremost problem encountered after nasal surgery is bleeding, as nasal mucosa is one of the most vascular structures of the body being richly supplied both by the internal and external carotid system. Hence post-operative nasal packing is required to control it. Even if this bleeding is mild, it may clot resulting in adhesion formation. If the bleeding is severe, it may result in inhalation as well as swallowing causing aspiration and nausea and vomiting respectively.[2] But nasal packing is probably the most dreadful part of the nasal surgery from patients' perspective, as it results in discomfort causing nasal blockage and poor sleep while it is in place, and also causes severe discomfort while it is being removed. Apart from a few selected cases of septoplasty, where haemostasis can be achieved by stitching or fibrin glue, or other haemostatic agents, majority of cases require nasal packing as nasal packing provides tamponade effect.[3]

It has been a long journey in search of an ideal nasal pack that not only controls bleeding, but also causes minimal discomfort in terms of nasal breathing, good sleep and minimal pain and bleeding during its removal. Traditional nasal packing methods using Vaseline ribbon gauze or paraffin mesh may cause nasal obstruction, sleep disturbance, mouth dryness and adhesions formation due to the mucosal abrasions caused by them.[4] As these traditional packs do little in terms of patient comfort, especially patient is forced to breathe through mouth, they often result in an unsmooth recovery from anaesthesia, disturbance in sleep and distress. Hence many innovations of nasal packs have been carried out to maintain nasal breathing so as to reduce patients' inconvinience.[5] Ventilating nasal packs allow the patient to breathe through the nose thereby alleviating

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the patient's distress, resulting in smooth recovery from anaesthesia and offer better sleep as patient can breathe through nose.

Although commercially prepared ventilating packs are available nowadays, but in our part of the world, the huge costs mark a question mark on their cost effectiveness. Locally prepared ventilated nasal packs is not a new concept but has never been studied in our setup. Therefore we carried out a prospective study to compare the improvised ventilating nasal packs with traditional gauze packs to see their effects in terms of post operative bleeding control, patients comfort while the packing was in place, and discomfort while removing the nasal packs.

Materials and Methods

This study was carried out in ENT Department, Combined Military Hospital Rawalpindi from July 2011 to December 2012. A total of 120 patients undergoing nasal surgery were included in the study. Patients were randomly divided into two groups A and B. Group A consisted of patients who were postoperatively packed with improvised ventilating nasal packs, and group B patients were packed with traditional Vaseline gauze packs. Improvised ventilating nasal packs consisted of 9 cm long size 5 French endotracheal tube on which Vaseline gauze was wrapped so as to give a cylindrical nasal pack with a breathing passage. They were secured by placing loose Vaseline gauze around them. The traditional Vaseline gauze pack consisted of 4 to 5 sheets of Vaseline gauze rolled on it to form a cylindrical nasal pack. The packs were removed 24 hours after surgery.

Patients were observed in three parameters:

1. Bleeding judged by any soakage/ change of pack
2. Comfort level judged by comfortable sleep/ disturbed sleep
3. Discomfort on pack removal, judged by pain/ bleeding.

The results were analyzed using SPSS 12.

Results

In this study one hundred and twenty patients were included. There were 31 females and 89 males in the study and ages varied from 18 to 55 years.

Mean for age in group A was 38 years (SD 7.5) and in group B was 41 years (SD 5.3).

Difference in bleeding control was found not to be significant using chi square test (P value > 0.05) as shown in Table I.

Difference in comfort level was significantly better in Group A (Improvised Ventilating Pack) with P value< 0.05 as shown in Table II.

Difference in discomfort levels on pack removal was not significant with P value>0.05 as shown in Table III.

Table I: Bleeding episodes in patients (n=120)

GROUP	BLEEDING	
	YES	NO
Group A	3	57
Group B	1	59

Table II: Patient Comfort Level (n=120)

GROUP	PATIENT COMFORT	
	Comfortable	Uncomfortable
Group A	42	18
Group B	5	55

Table III: Pain on pack removal (n=120)

GROUP	PAIN	
	Mild Pain	Moderate Pain
Group A	35	25
Group B	24	36

Discussion

Nasal packing is routinely carried out primarily to control post operative bleeding, although some surgeons do not believe in this concept.[6] Nasal packing currently being used consist of either Vaseline gauze packs, finger glove stalls, or ribbon gauze packing. These packs though effective in stopping post operative bleeding but are extremely uncomfortable due to the fact that the patient is unable to breathe through the nose. Furthermore these packs cause headache, throat dryness and local discomfort.[7]

This study showed an excellent bleeding control in both these groups, probably bleeding control is more due to better packing technique rather than the nasal packing and the packing material.

In our study we found that our improvised ventilating packs were superior to conventional Vaseline gauze packs in terms of patient comfort as they reduced patients' inconvenience due to active nasal breathing. Similar results were shown by Kim et al.[8] But in other studies ventilating nasal packs are not found superior in maintaining eustachian tube function.[9]

The ability to have a patent airway after nasal surgery is of the utmost importance as it provides a natural way of breathing, where as a blocked nose as in conventional nasal packs causes throat dryness and headache.

In this study, discomfort in terms of pain and bleeding on removal of pack was not significant among both the groups. Probably it was because of the material of the packing, as some packing materials like merocel packs cause much pain and bleeding when removed.[10] Regarding materials to be used for nasal packing, biodegradable synthetic polyurethane foam has also found to be much superior as it causes less pain and bleeding.[11]

Commercially available ventilating packs like Rapid Rhino are available but when compared to Improvised nasal packs the price is enormous. The ability to pack a patient's nostril helps the patient to breathe normally even though the patient has undergone nasal surgery.

Conclusion

Ventilating nasal packs provide a better alternative to conventional nasal packs in terms of patient comfort after nasal surgery, while they are as good in providing bleeding control.

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ORIGINAL ARTICLE

Spectrum of Pediatric Dermatosis and Seasonal Variation

Asma Khalid, Tariq Mehmood

ABSTRACT

Objective: To determine the pattern of skin disorders seen among children attending a Medical College Hospital.
Study Design: A descriptive Study .
Place and Duration of Study: The study was conducted at Dermatology Dept. Pakistan Railway Hospital from Dec 2011 to July 2012.
Materials and Methods: All children 13 years and below attending the Dermatology OPD with skin diseases were included between the period of December 2011 to July 2012. A detailed history was taken; thorough clinical examination was done and was supported by investigations wherever necessary. The diseases were tabulated based on the various groups and results were analysed.
Results: A total of 2357 cases (boys 1037; girls 1320) with different dermatosis were included in the study.. Most of the disorders were seen between 1 to 5 years of age. The most common dermatoses were bacterial infections (26.21 %) and infestations(13.70%) followed by viral and fungal infections (11.96% , 11.41%). Seasonal variation among childhood dermatosis were also noted during summer and winter. Total of 996 patients were included in the study. Most common dermatosis seen among children during summer were bacterial infections (41.16 %) followed by miliaria (12.55), viral and fungal infections (11%) napkin dermatitis (10.84) and infestations (9.63). During winter most common dermatosis seen were infestations (26.26 %), seborrheic dermatitis (24.45%) bacterial and fungal infections and pityriasis alba (9.31 %). Among other dermatosis seen were papular urticaria, vitiligo, alopecia areata, papulosquamous disorders, acne and genetic disorders (0.76 %).
Conclusion: In the present setting bacterial infections and infestations are the most common pediatric dermatoses followed by viral and fungal infections and eczematous eruptions.

Key words: *Dermatosis, season, pediatric dermatosis.*

Introduction

Skin diseases are common in children and are encountered frequently. The presentation and spectrum of diseases among children are unique.[1] Children with skin diseases are attended by pediatricians and dermatologists worldwide[2,3] Dermatological problems constitute at least 30 % of all outpatient visits to a pediatrician and 30 % of all visits to a dermatologist involve children.[4] One study reported that more than 65% of children consult a physician for a skin problem by 5 years of age and various other studies have reported the incidence of cutaneous disorders in children to be 9 to 37 %.[1,5]

Some of the skin ailments in children are transitory and require only a single or a few visits to the dermatologist, whereas others are chronic and recurrent and thus require more frequent follow-up.[5,6] Different types of dermatosis have psychological impact on the child and parents. Dermatologic conditions in children also pose a special dilemma to primary care physicians and pediatricians.[7,8] To efficiently plan the health services for a given community, it is mandatory to have a fair idea about the existing ailments in the region.[9,10]

The pattern of skin diseases is known to differ in different countries of the world and in different regions of the same country. It's a common knowledge that type and amount of disease in any community are affected directly or indirectly by climate.[11] Also, different degrees of exposure to external factors may give rise to differential prevalence of dermatoses among infants, toddlers and children.[11,12] The literature is scanty on pattern of skin diseases in children in this part of the globe. Therefore present study was undertaken to identify the pattern of common dermatoses in this important age group.

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Materials and Methods

The study was conducted at Department of Dermatology Pakistan Railway Hospital Rawalpindi. All the children 13 years and below attending the Dermatology outpatient department with cutaneous manifestations between the period of December 2011 to July 2012 were included in the study. A detailed history was taken; thorough clinical examination was done and was supported by investigations wherever necessary.

A total of 2357 consecutive patients were enrolled in the study. Each child's name, age, sex, and diagnosis were recorded on a proforma. Informed consent was taken from each patient. The following parameters were studied: age distribution, distribution of dermatosis according to their percentage frequency, frequency and pattern of skin diseases in different age groups, and categorization of the dermatosis under specific groups. Another parameter studied was seasonal variation among childhood dermatosis during winter and summer. Majority of patients were diagnosed clinically and special diagnostic tests were conducted in 2.6% of patients. The most common diagnostic test used was KOH mount and skin biopsy was done in 2 patients. It is generally preferred that biopsy should be discouraged as a routine procedure in children and should be used only in complicated dermatosis where clinical diagnosis is difficult.

Categorization of the dermatosis was done under various groups and results were analyzed using Microsoft excel.

Results

A total of 2357 patients were enrolled in the study. Table I shows the age and sex distribution. There were 1037 (44%) male and 1320 (56%) female patients. The ages of the patients ranged from neonates to 13-year-old. (Table I)

To compare the pattern of dermatoses in different age groups within the pediatric population, these patients were divided into three broad age categories. These included infants (<1 years), other age group comprised children 1–5 years of age and third age group comprised of children 5-13 years of age. The largest patient population was from 1 to 5 years, they comprised 42.3% of the total number of patients. Patients more than 5 years of age constituted 35.59 %, while children less than 1 year of age constituted around 20.66 % of the total patients studied. (Table II).

Pattern of dermatosis and their frequencies were seen in different age groups. To simplify the data, some of the dermatosis were grouped under a broad category, for example, fungal infections covered all forms of dermatophytic infections (tinea capitis, corporis, etc). Dermatosis most frequently seen were bacterial infections (26.2 %) and infestations (13.7%). Table II lists all the dermatosis in descending order of frequency. The first three dermatosis constituted about 50% of the total cases. Among other dermatosis seen were psoriasis, vitiligo, urticaria, alopecia areata, naevi, acne and genetic disorders (0.76%).

Data regarding seasonal variation in childhood dermatosis was also recorded. Seasonal variation was seen during summer and winter. A total of 996 patients were studied for dermatosis during summer from May to July 2012. Data was studied during winter from December 2012 to February 2013. Total of 773 patients were seen during winter and data was collected regarding different dermatosis. (Table III)

During summer most common dermatosis seen were infections followed by miliaria, napkin dermatitis, infestations and pityriasis alba. During winter commonest dermatosis were infestations (scabies), followed by bacterial infection, seborrheic dermatitis and pityriasis alba.(Table III).

Table I: Demographic profile of study patients (n=2357)

AGE	Male	Female	Total
Infants(0 to 1 year)	199	288	487
1 to 5 years	454	545	999
5 to 13 year	384	487	871
Grand Total	1037	1320	2357

Table II. Frequency and Pattern of Dermatosis in Different Age Groups (n=2357)

Diseases	<1 yr	1-5 yr	>5 yr	Total	Percentage of total case
Bacterial infections	98	385	135	618	26.219
Scabies/Pediculosis	44	115	164	323	13.703
Fungal infections	29	107	146	282	11.964
Viral infections	41	69	159	269	11.412
Seborrheic dermatitis/Atopic dermatitis	114	49	64	228	9.673
Napkin dermatitis	123	40	5	168	7.127
Pityriasis alba	6	99	29	134	5.685
Miliaria	17	69	42	128	5.430
Urticaria/Angioedema	7	23	82	112	4.751
Atopic dermatitis	5	37	4	77	3.266
Others	3	6	9	18	0.763

Table III. Seasonal Variation in Childhood Dermatosis (n=2357)

Name of the disease	SUMMER (996) May-July No.of cases Having disease	%age	WINTER(773) December-February No.of cases Having disease	%age
Bacterial infections	410	41.164	105	13.583
Scabies/Pediculosis	96	9.638	203	26.261
Fungal infections	113	11.345	81	10.478
Viral infections	110	11.044	92	11.901
Seborrheic dermatitis/Atopic dermatitis	12	1.204	189	24.450
Napkin dermatitis	108	10.843	28	3.622
Pityriasis alba	22	2.208	72	9.314
Miliaria	125	12.550	3	0.388
Total	996	100	773	100

Discussion

Skin diseases in children are encountered frequently and their characterization is essential for the preparation of academic, research and health plans.[11] The pattern of skin diseases in any geographic area are affected directly or indirectly by climate, external environment, dietary habits and socioeconomic status.[11,12]

In the present study the most common dermatosis seen were infections and infestations comprising about 63.2 % of patients. Various studies have reported them occurring in the range of 35.6 % to 85.2 %.[13,14] Bacterial infections were most frequent (26.21%) in the category of infections/infestations. Various studies have reported them occurring in range of 11.4 to 54 % showing the variable trends in different populations.[15,16] Scabies was common among infestations and it highlights the varying trends with a higher prevalence from studies from Africa, China, India[16,17] and lower prevalence from the West showing improved level of hygiene.[18] Among the fungal infections tinea capitis was most common, similar to some other studies.[19] Among viral infections viral warts were the most common. They were more prevalent in school children, which is probably related to an increase in outdoor and sports activities in this age group.[19,20,21] The high incidence of infection and infestations could possibly be due to poverty, overcrowding, under nutrition, poor hygiene and lack of health education. Hot and humid climate of this region could have favoured higher incidence of infections.

Among eczemas seborrheic dermatitis was the commonest form (9.67 %). However, many times it becomes difficult to differentiate atopic dermatitis in infancy from infantile seborrheic dermatitis so they were classified together. That is in accordance with another study (13 %).[22]

Seasonal variation among childhood dermatosis were also noted during summer and winter. Total of 1769 patients were included in the study. Most common dermatosis seen among children during summer were infections (bacterial, viral and fungal) followed by miliaria (12.55). Among infections impetigo was most common during the summer. High temperature and humidity of summer season favors rapid proliferation of pyogenic bacteria, hence high prevalence of bacterial skin infections. Other dermatosis seen commonly in summers were napkin dermatitis (10.84 %) and infestations (9.63 %). This is in accordance with other studies.[21,22] During winter most common dermatosis seen were infestations (26.26 %), seborrheic dermatitis (24.45%) bacterial and fungal infections and pityriasis alba (9.31 %). Among other dermatosis seen were papular urticaria, vitiligo, alopecia areata, papulosquamous disorders, acne and genetic disorders (0.76 %).

The first large epidemiologic survey of skin diseases was conducted in 1974 with an analysis of 10,000 patients from South Africa.[23] In the western world, skin problems among children contribute to about one-third of all consultations in pediatricians' offices. A few similar studies have been performed previously from other regions and from Pakistan.[24,25,26]

Most pediatric dermatologic diagnoses do not require investigations as evidenced by our study where only a few of dermatoses were investigated. Skin scraping for KOH was the most common investigation carried out in our study .Of the patients referred from the other departments, a majority were from pediatricians (82 %) followed by surgery and other departments.

In summary, this study has shown that majority of skin diseases seen in our setup are from a few categories, mainly infections, infestations and various eczematous disorders. The percentage frequency of various dermatoses not only represents the distribution of skin diseases within a region but gives a fair basis on which to decide future health plans, health education, and research activities.

Prospective epidemiologic surveys carried out in outpatient clinics form an important aid in understanding the spectrum of skin diseases in the region and form a basis for planning the future health care, s. Only a few surveys of a similar kind in the pediatric age group are available in the literature. Our study revealed a preponderance of infectious dermatosis and infestations that one would expect in a tropical pediatric dermatology clinic.

Therefore, it seems necessary to ensure that the dermatologic education of medical students, primary care physicians, and pediatricians focuses on accurate recognition, diagnosis, and management of these common skin diseases.

Conclusion

To conclude, skin diseases have great psychological impact and children, being more sensitive and vulnerable, are affected more severely. In order to plan better health care for children, it is mandatory to have a fair idea about the existing ailments in the region. In the present study we have attempted to acquire sufficient information regarding the skin ailments in our region. More surveys of a similar kind are required from different regions in order to study the spectrum of pediatric dermatology problems.

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ORIGINAL ARTICLE

Acute Lymphoblastic Leukaemia: Clinicohaematological Features, Laboratory Characteristics and Prognostic Factors: A Single Center Experience

Ayesha Nayyar, Suhaib Ahmed

ABSTRACT

Objective: To study clinico-haematological features, Laboratory results and prognostic factors in patients of acute lymphoblastic leukaemia.

Study Design: Descriptive study.

Place and Duration of Study: This study included all newly diagnosed cases of acute lymphoblastic Leukaemia coming to Armed Forces Institute of Pathology Rawalpindi from Jun 2008-Feb2010.

Materials and Methods: The detailed clinical history with physical findings were charted on the proforma. About 3ml blood from each patient was taken in EDTA container. The blood was analyzed on Haematology analyzer Sysmex KX 21. Quality control was maintained by running normal and abnormal controls. Bone marrow aspiration was done at the time of diagnosis. Five push smears were made from each case; 2 for leishman stain, one for Sudan black B, one for periodic cid schiff, and one for acid phosphatase.

Results: The common clinical features in children were pallor (100%), fever (93%), hepatomegaly (70%), splenomegaly(64%), lymphadenopathy (58%), bleeding manifestations (27%) and bone pain(9%). Pallor(100%) and fever(89%) were also common manifestations in adults.

Initial high white cell count (> 50x109/l) was observed in 9 (12%) patients. Three patients showed hyperleucocytosis (> 100x109/l). Haemoglobin < 8gm/dl was seen in 30(11%)patients and platelet count less than 20x109/l was observed in 8(10.8%) cases. About 9 (12%)patients showed pancytopenia.

According to French-American-British (FAB) criteria ALL-L1 was the commonest FAB type (81%), followed by L2 (16%) and L3 (3%) in children while ALL L2 was high among adult age group .

Conclusion: We found that ALL is a frequent childhood hematological malignancy in our setting and is more prevalent in males both in children and adults. ALL- L I type being more common than other types of ALL. Considering the prognostic factors of age, WBC count, lymphadenopathy, T immunophenotyping an FAB classification; most of our patients constitute a better prognostic group.

Key words: *ALL, clinicohaematological features, lab findings, prognostic factors.*

Introduction

Acute lymphoblastic leukaemia is a malignant disorder of lymphoid progenitor cells.[1] It results from neoplastic transformation of lymphoid stem cell due to altered genome of stem cells. There is lack of differentiation beyond blast stage and progressive accumulation of leukaemic blasts in the bone marrow[2] with resultant suppression of normal haematopoiesis leading to anemia, thrombocytopenia and neutropenia.[3] The lymphoblasts also accumulate in various extramedullary sites, especially the liver, spleen , lymph nodes, meninges, gonads and thymus.[1]

Acute lymphoblastic leukaemia is mainly a childhood malignancy.[4] It affects both children and adults with peak incidence between 2-5 year[5] and a rise again after 50 years of age.[6] Younger patients especially those younger than age 50years have a better prognosis than older patients.[7] ALL in elders is a rare disease.1Acute lymphoblastic leukaemia is still the most common cause of death in children suffering from cancer".[8]

Materials and Methods

It was a descriptive study conducted on seventy four patients of ALL selected on the basis of non probability purposive sampling. All newly diagnosed patients of ALL were included in the study.

The subjects of study were 74 cases of ALL. All of the cases came to Armed Forces

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Institute of Pathology Rawalpindi for bone marrow aspiration and were diagnosed by standard morphologyi.e blast cells having high N/C ratio, moderately open nuclear chromatin, 0-2 inconspicuous nucleoli and scanty or absence of cytoplasmic granules) & cytochemical methods i.e blast cells showing SBB negativity, acid phosphatase and periodic acid Schiff positivity).

Demographic data including name, age, sex, telephone no. was recorded. Clinical examination for liver, spleen, lymph nodes enlargement, bleeding manifestations and bone pains was recorded. Hematological parameters including Total leucocyte count, Haemoglobin and Platelets count were also recorded. Blood counts were performed on sysmax KX 21. Percentage of blasts in peripheral blood and bone marrow at the time of diagnosis was charted on the proforma.

Results

A total of 74 patients of acute lymphoblastic leukaemia were studied

The age of patients with ALL ranged between 1 and 80 years. The total no. of children were 45(60%) and adult were 29(40%). The percentage of patients between 1-14 years is 43%. The mean age for children (<15 yrs) was 5.68+3.32 and the mean age for adults was 36.12+17.9.(TableI)

There were 45(61%) males and the females were 29 (39%) cases.

Regarding Children, males were 28(62%)cases and females were 17(38%).(Fig 1.1) In adults males constituted 17(59%) and females were 12(41%).(Table II)

In children Pallor and fever were the two most common presenting features (100 % and 93%) respectively, the next common were hepatomegaly (70%), splenomegaly (64%), lymphadenopathy (58%), bleeding manifestations (27%). Other less common symptom was bone pain which was seen in 9% of cases. (Fig 1)

Pallor(100%) and fever(89%) were also common manifestations in adults followed by hepatomegaly (59%), splenomegaly (36%), lymphadenopathy (25%), bleeding manifestations (25%). Bone pain was seen in 9% of adult cases and mediastinal Mass in 2 (3%) cases. (Fig 2)

Using FAB criteria, 60(90%) children showed L1 morphology, 12(16%) children showed L2 morphology and 2 (3%) patient had L3 morphology. (Fig 3) While in adults 29(39%) patients showed L1 morphology, 42(56%) patients showed L2 morphology and 4(5%) patient had L3 morphology. (Fig 4)

Table I: Age distribution, no. of patients and mean age of patients with ALL (n=74)

Age in years	No. of patients	Age Mean ± SD
1-14	32(43%)	4.60 ± 2.11
15-30	18(24%)	17.3 ± 2.70
31-50	9(12%)	35.7 ± 1.88
>50	15 (20%)	56.8 ± 3.11

Table II: Gender distribution of patients with ALL (n=74)

Total	Male	Female
Children	28(62%)	17(38%)
Adults	17(59%)	12(41%)
Grand Total	45(61%)	29(39%)

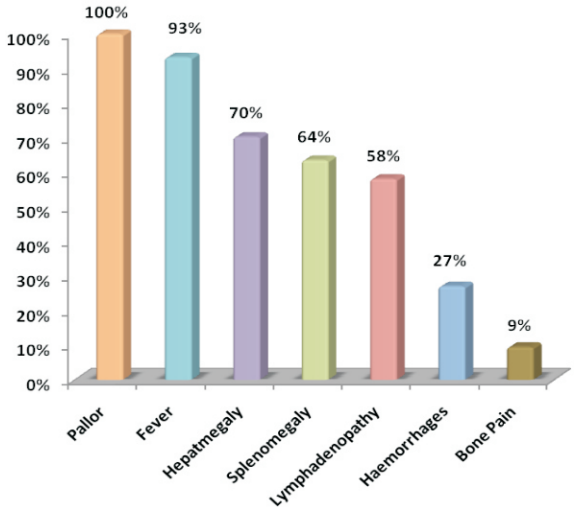

Fig 1: Frequencies of symptoms among children of ALL(n=74)

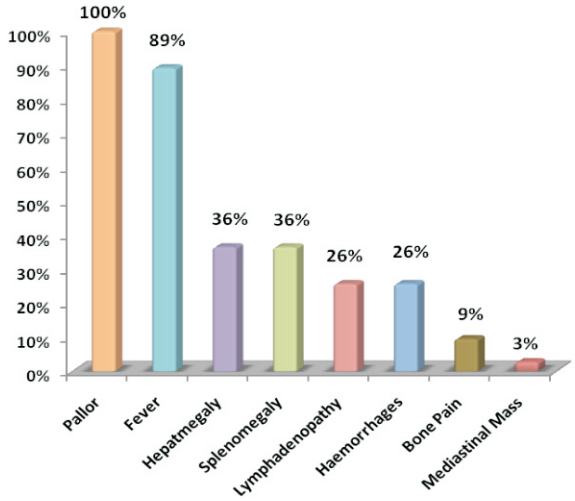

Fig 2: Frequencies of symptoms among adults of ALL(n=74)

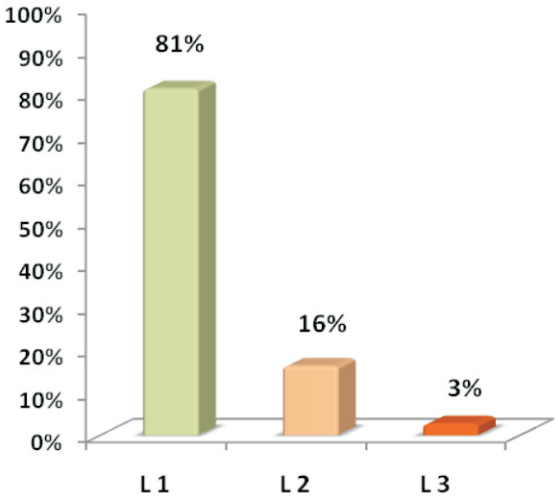

Fig 3: FAB types of ALL in Children.(n=74)

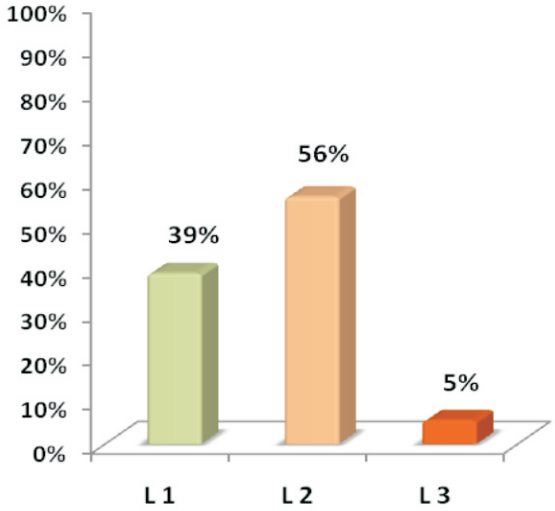

Fig 4: FAB types of ALL in adults.(n=74)

Discussion

Acute lymphoblastic leukaemia constitutes 12% of all leukaemias.[9] It affects both adults and children and can occur at any age.[10] There has been a gradual increase in the incidence of ALL in the past 25 years.[11] However with improvement in diagnosis and treatment, overall cure rate for children with acute lymphoblastic leukemia has reached 90%.[12]

ALL is more common than other acute leukaemias especially in children. Few researchers have made the high percentage of ALL among different types of leukaemias in their study groups.[13]

The highest incidence of ALL is found in Italy, United States (US), Switzerland, and Costa Rica.[14] In the United States there are approximately 2,900 children and adolescents younger than 20 years diagnosed with ALL each year.[15]

The peak age in our study was seen between 2-7 years, a later peak between 10-17 years and a slight rise between 21-28 years. Hence as far as age is concerned all of these patients fall in good prognostic group. The age distribution in children and adolescent in our study has been in agreement with other observations.[16] The male preponderance 2:1 has also been well observed by other

researchers.[17] The mean age for children was also in agreement with other studies. [18] Regarding FAB ALL type; approximately 81% of children with L1 morphology fall in good prognostic group while 56% of adults with ALL L2 morphology fall in moderate prognostic group.

Clinical features of ALL varies. Generally patients with ALL presents with fever, easy fatiguability, shortness of breath, infections, haemorrhagic manifestations especially oozing from gums and epistaxis.[11] Pallor, petechiae, echymoses, weight loss, hepatosplenomegaly and lymphadenopathy are common presenting signs in these cases.[1] In more than half of the patients hepatomegaly and splenomegaly are present. 1 Less than 10% of patients have symptomatic central nervous system (CNS) involvement and T cell mediastinal mass. Testicular involvement is rare in adults.[11]

Rarely (5% of cases) bone pain, and limping may be the only presenting symptom which is due to leukaemic infiltration of periosteum or joints, and may cause delay in the diagnosis.[19] In our study bone pain was seen in 9% of patients.

A minor percentage of patients of ALL presents with pancytopenia and are labelled as subleukaemic leukaemia cases. These patients usually do not have significant visceromegaly; hence mimicking aplastic anaemia. The peripheral blood in these patients usually do not show the presence of blast cells. Therefore they can only be diagnosed by bone marrow aspiration/ trephine biopsy. About 12% of our patients fall in this category which is in agreement with a study conducted by Tariq et al.[20] This incidence is higher as compared to western study reported by Patthak et al.[21]

Childhood ALL cases have much better prognosis than the adults. Infants and children age 10 years and older tend to have a poorer outcome than young children with ages 1 - 9 years.[22] Infants with MLL gene rearrangement have very high (WBC) counts and increased incidence of central nervous involvement with poor outcome.28 Some studies indicate a better prognosis for girls than boys. This may be partly due to boys' risks for testicular cancer.[23]

The survival of adults with acute lymphoblastic leukemia (ALL) is inferior to that of paediatric patient[24] because a higher proportion of adults have unfavourable cytogenetic abnormalities such as t(9;22) translocation.[25] Many patients over the age of 60 years do not tolerate intensive chemotherapy,hence the outcome remains poor for older patients.[26] Younger patients especially those younger than age 50years have a better prognosis than older patients.7 About 54 (73%) patients in our study fall in age group below 50 years.

A WBC count of 50x109/l is used as a cut off limit between better and poor prognosis.[27] Hence People diagnosed with a WBC count below 50,000 tend to do better than people with higher WBC counts. Nine patients in our study showed WBC count >50x109/l. Three patients showed WBC count >100x109/l. Two of our adult patients and one of our patient aged 4 yrs died with WBC count; >50x109/l and 100x109/l respectively. Two of these patients had ALL-L2 morphology and one patient had L3 morphology. The subtype of T and B cell, also affects the prognosis. Patients with T cell ALL tend to have a better prognosis than those with mature B cell ALL i.e Burkitt Leukaemia.[28]

Conclusion

We found that ALL is a frequent childhood hematological malignancy in our setting and is more prevalent in males both in children and adults. In childhood ALL cases ALL –L I is more common than other ALL subtypes. Considering the prognostic factor of age, WBC count, lymphadenopathy, T immunophenotyping and FAB classification; most of our patients constitute

a better prognostic group. Another important finding of this study is that about 12% of the patients presented with pancytopenia. This is an ongoing study and includes as a second stage, remission response of our patients to standard induction therapy.

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ORIGINAL ARTICLE

Selection of Appropriate Artificial Maxillary Central Incisor Size Using Dimensions of Hard Palate

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ABSTRACT

Objective: To determine the ratio between width of hamular notches and maxillary central incisors' width at cervical, incisal and contact points.

Study Design: Cross–sectional descriptive study.

Place and Duration of Study: Department of Prosthodontics, Armed Forces Institute of Dentistry, Rawalpindi from Feb 2010 to Aug 2010.

Materials and Methods: Impressions of the maxillary jaw of 125 subjects were made and casts were obtained. A precise caliper was used to make the measurement ofthe widths of the maxillary central incisors at three different levels; the incisal edge (IW), at the level of interdental contact points (ConW) and in the cervical region(CerW). The hamular width (HW) was measured between the most mesial demarcation point of the left and the right hamular notches.The ratios between the hard palate width (HW) and maxillary central incisor widths at all the three levels (IW, ConW, CerW) were calculated.Data was analyzed using SPSS 16.

Results: Of the125 subjects, 52 (41.6%) were males and 73 (58.4%) were females while mean age of the subjects was 26.56 years. Ratios HW/CerW, HW/IW and HW/ConWwere calculated as 6.08+0.18mm, 5.9+0.17mm and 5.81+ 0.17mm.

Conclusion: The HW can be used as a preliminary method for determining the width of the maxillary central incisor.

Keywords: *Incisor width, complete dentures, denture esthetics.*

Introduction

A harmonious and natural smile is essential in achieving a pleasant face.[1] Esthetics is the primary consideration for patients who seek prosthodontic treatment.[2] For the treatment to be successful, optimal facial esthetics must be achieved.[3] The ultimate objective of prosthodontic treatment in anterior segment of the mouth is to create a harmoniously balanced smile with ideal interaction of the teeth, gingivae, lips and face.[3,4]

For dentures to be esthetically acceptable,they should not vary from natural teeth.[4] This makes the selection of artificial teeth significant. Many authors agree that the upper central incisors are the key determinants of anterior dental esthetics. Therefore, one difficult and important aspect of prosthodontic rehabilitation is the selection of appropriately sized maxillary anterior teeth.[5]

There is no single universally accepted that can be used reliably to help select artificial teeth.[6,7] Many researchers haveadressed the correlation of dimensions of various facial landmarks and the size of a maxillary anterior tooth.[8,9,10,11] Levin suggested the "golden proportion" to relate the width of the successive anterior teeth as viewed from the labial aspect.[12] Snow proposed the "golden percentage" to evaluate the mesio-distal dimensions of anterior teeth. More recently, Ward gave the concept of the "recurring esthetic dental (RED) proportion". He described RED as the proportion of the successive width of the teeth remaining constant when progressing distally from the midline.[12] Various anatomic measurements have been suggested as guides to determine the correct size of the anterior teeth including the inter-commissural width, bi-zygomatic width, inter-alar width, and inter-pupillary distance.10In previous studies, the size and

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shape of maxillary central incisor has shownno significant correlation to the shape and dimensions of a patient's soft-tissue landmarks.[6] However, studies correlating the dimensions of the hard palate and the maxillary incisors are rare.

The anterior portion of maxilla undergoes extensive resorptive changes following tooth extractions.[5] Hamular notches, however, are not subject to resorption after the extraction of teeth.[6] Studies reveal that a close relationship exists between the morphology and dimensions of maxillary central incisors and those of the hard palate.[11] In a study by Petricevic N et al, the author correlated some dimensions of hard palate and the maxillary incisors. The various ratios calculated are: hamular width / cervical width of central incisor = 5.71, hamular width / incisal width of central incisor = 5.70, hamular width / contact point width of central incisor = 5.51.[6]

The aim of this study is to determine the relationship between dimensions of maxillary anterior teeth and those of the hard palate. No recognizable work has yet been done on this subject on the local population. This study will be a step ahead in suggesting a single reliable biometric criteria for the selection of appropriately sized maxillary central incisors. This will enable the clinicians to achieve a dental appearance that is in accordance with overall facial esthetics. It will also give us an insight towards restoring the facial as well as dental esthetics in a more scientific way, thereby satisfying the patients up to their expectations.

Materials and Methods

This case control study was carried out in Department of Prosthodontics, Armed Forces Institute of Dentistry, Rawalpindi over a period of six months from Feb 2010 to Aug 2010.One hundred and twenty five subjects age between 18 to 35 years with intact anterior teeth and Angle's Class I molar relationship were selected for participation in the study.Subjects with one or more teeth missing (except the third molars), having any restorations or attrition of anterior teeth, any tooth size/ shape abnormalities, marginal periodontitis and gingival recession or had undergone orthodontic treatment were not included in the study.

A written consent was obtained from each subject. A round end filling instrument was used to locate the hamular notch precisely and indelible pencil (0.1 mm point) was used for their demarcation.Impressions of the maxillary jaw of each subject were made using irreversible hydrocolloid. Casts were obtained by pouring the recorded impressions in hard stone. A precise caliper (0.1 mm precision) was used to measure distance between the two hamular notches and widths of right and left maxillary central incisors(MCIs) on the dental cast. The measurements were made between incisal edge and the most apical point of marginal gingiva. The widths of the right and the left MCIs were measured at three different levels, at the incisal edge, interdental contact points and between the tips of interdental papilla. Mean for each dimension between right and left maxillary central incisor was calculated to obtain the incisal edge width (IW), the interdental contact point width (ConW) and the cervical width (CerW) of the central incisor of the subject. The hamular width (HW) was measured between the most mesial demarcation point of the left and the right hamular notch.

Data was analyzed using SPSS Version 16. Mean±S.D was calculated for age, hamular width,central incisor width at incisal edge, contact point, andcervicallevel. Frequencies and percentages were presented for gender. Ratios (hamular width / cervical width of central incisor, hamular width / incisal width of central incisor, hamular width /

contact point width of central incisor) were then calculated.

Results

This study comprised of 125 subjects in total, out of which 52 (41.6%) were males and 73 (58.4%) were females (Fig I).The minimum age of the patients was 18 years and maximum 35 years while mean age was 26.56 (Table I).

Descriptive statistics for mean HW, CerW, IncW and ConW values and the three ratios namely HW/CerW, HW/IncW and HW/ConWare presented in Table I.

Table I: Gender-wise Mean Values

Gender		Age (years)	HW (mm)	CerW (mm)	IncW (mm)	ConW (mm)	Ratio HW/CerW	Ratio HW/IncW	Ratio HW/ConW
Male	Mean	27.58	55.1788	8.9115	9.1521	9.2967	6.1858	6.0210	5.9256
	N	52	52	52	52	52	52	52	52
	Std. Deviation	4.625	2.91106	0.35727	0.34250	0.39278	0.15613	0.15122	0.13636
Female	Mean	25.84	49.3575	8.2130	8.4434	19.0914	6.0071	5.8416	5.7401
	N	73	73	73	73	73	73	73	73
	Std. Deviation	3.944	2.77183	0.42972	0.41922	89.58356	0.16052	0.15070	0.15763
Total	Mean	26.56	51.7792	8.5036	8.7382	15.0168	6.0814	5.9162	5.8173
	N	125	125	125	125	125	125	125	125
	Std. Deviation	4.309	4.03059	0.52841	0.52278	68.43508	0.18112	0.17455	0.17463

The meanHW/CerW ratio is 6.08+0.18mm. Gender-wise description reveals the mean HW/CerW for males to be 6.18±1.5mm and 6.00±1.6mm for females.

The meanHW/IncW ratio is 5.9+0.17mm. Gender-wise description reveals the mean HW/IncW for males to be 6.02±0.15mm and 5.84±0.15mm for females.

The meanHW/ConW ratio is 5.81+ 0.17mm. Gender-wise description reveals the mean HW/IncW for males to be 5.92±0.13mm and 5.74±1.6mm for females.

Discussion

Data correlating the dimensions of hard palate with those of the maxillary incisors is scarce in literature. Attempts made on this subject are few and far between. No appreciable work has been done in this regard on the local population.

The present study used the dimensions of hard palate (hamular width) for the determination of artificial maxillary central incisor width during complete denture construction for edentulous patients.

The results of the present study compare favorably with those reported by N. Petricevic et al.[6]who included 80 dentate Croatian subjects (24 male, 56 female) with a mean age of 24 years, while our study was carried out on 125 subjects with a mean age of 26.5 years.The ratio HW/IncW recorded

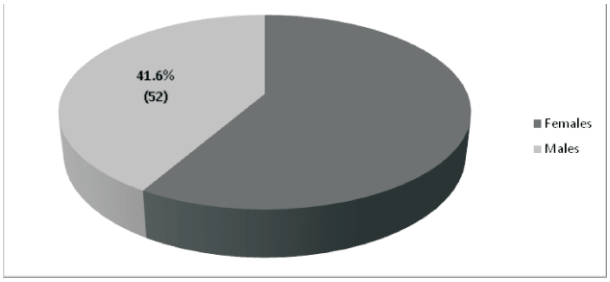

Fig 1: Gender Distribution of Subjects

in the present study is 5.9mm that closely correlates with that of N. Petricevic et al[6](5.7mm). The ratio HW/CerW calculated by our study is 6.08mm while that reported by Petricevic is 5.71mm. Also, the ratio HW/ConW by our study (5.81mm) closely approximates that of Petricevic's study (5.51mm).

The values of HW in the study conducted by Petricevic et al.[6] ranged from 36 to 55mm with a mean of 47.1mm. In our study, the HW values ranged from a minimum of 43.5mm to a maximum of 63.4mm, with a mean of 51.7mm. This difference of 4.6mm in HW can be explained on the basis of the population groups studied. It can be inferred that the values of HW and hence, width of central incisors tend to be greater in a South-Asian population.

In a similar study carried out by Petricevic et al and Stipetic et al, the widths of maxillary

central incisor at the cervical, incisal and contact point areas were reported to be 8.26, 6.19 and 8.55 mm respectively.[11] These values compare well with those of our study except for the incisal width which tends to be higher among our study group.

Cesario et al. conducted a study on 229 dentate Saudi subjects (120 males, 109 females) mean age 21.16 years,and reportedthe central incisor width to be 8.9mm on average.[15] The results match closely with those of our study.

A comparable study conducted on 80 patients by S. Wolfart et al.[9] revealed maxillary central incisor width to be 9.1mm which is slightly larger than the values achieved in our study.

Dimensions of the all anterior teeth for most racial groups vary with gender, with men exhibiting wider anterior teeth than women as reported in many studies. [16,17,18]

It was studied and reported by Gillen et althat in both black and white populations, men hand wider as well as longer maxillary anterior teeth in comparison to women.[16] Similarly, Sterrett et al.postulated the average width and length of the crowns of the maxillary anterior teeth was significantly greater for white males than for white females.[17] In the study of Hasanreisoglu et al. the averagecrown width and height values for the central incisors and the canines were significantly greater for men as compared to women, with the central incisors being the widest teeth in both genders.[7] Hock DA et al. measured the width of the maxillary central incisor in several racial groups and noted variations in most of them, with men, again having wider central incisors than women.[13]

In our study the mean values for the width of central incisor at the cervical, incisal and contact point areas for males were 8.91, 9.15 and 9.29 mm respectively. For females, the values were 8.21, 8.44 and 8.59 mmrespectively. This clearly indicates that the males have larger mesiodistal width of central incisors than females in our study population. These findings are in good agreement with the results of other related studies.[13,17]

The widths of maxillary central incisor vary considerably amongst different races. Very few data is available on this subject in local population. There is a requirement of extensive local work on larger scale in order to evaluate orofacial biometric guides in our population.

Conclusions

With the limitations of this study, the following conclusions were drawn:

1. Hamular width can serve as a reliable and helpful landmark in order to determine the maxillary central incisor's dimensions.
2. Maxillary central incisor's cervical (CerW), incisal (IncW) and contact point width (ConW) might be calculated by dividing hamular width (HW) by 6.08, 5.91 and 5.81 respectively.
3. The HW can only be used as a preliminary method for determining the width of the maxillary central incisor. The final decision regarding tooth selection should be made byemploying various guidelines suggested in the literature regarding anterior tooth selection and should be confirmed by consultation with the patient.

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ORIGINAL ARTICLE

Comparison of Self-Assessment with Peer and Student Assessment in Evaluating the Overall Performance of the Faculty

Imran Amjad, Syed Shakil-ur-Rehman, Asghar Khan , Khalid Farooq Danish, Ilyas Babar Awan, Sikandar Ghayas Khan

ABSTRACT

Objective: To evaluate the overall faculty performance by comparison of Self-assessment with peer and student assessment.

Study Design: A comparative cross sectional survey.

Place and Duration of Study: Study was conducted from January to June 2012 in Riphah College of Rehabilitation Sciences, Riphah International University Islamabad.

Materials and Methods: This research study was conducted among students of Doctor of physical therapy (DPT), post-professional Doctor of physical Therapy (PPDPT), and Master of Science in speech language pathology (MS-SLP), and faculty members at Riphah College of Rehabilitation Science (RCRS), Riphah International University Islamabad. The total sample size was 730, including 700 students and 30 faculty members.

A questionnaire was developed according to likert scale, and after a pilot study on 20 student and 10 faculty member to determine the reliability. The questionnaire was circulated among all the 30 faculty members and 700 students, including 500 undergraduate and 200 post graduate students of all the 3 programs.

The data was analyzed and Wilcoxon (Kruskal-Wallis) was applied at 95% level of significance for all the 3 groups. The group "A" included assessment of the performance of the faculty members done by the students, group "B" done by other faculty members, and group "C" included self assessment done by faculty members. The averages were calculated to determine the overall performance of the faculty members as assessed by themselves, other faculty members, and the by students as well, afterwards the averages of 3 groups were compared.

Results: the overall performance of the faculty members was graded as 71% (P=0.015) as evaluated by the students, 77% (P=0.009) as evaluated by other faculty members, and 73% (P=0.011) as evaluated by the faculty members through self assessment.

Conclusion: It is concluded that there was no significant difference in the performance of the faculty members, as assessed themselves, by the students and the other faculty members.

Key words: *Faculty performance, self assessment, students' feedback.*

Introduction

Faculty evaluation is always vital for the Faculty development in academic institutions for further improvement and enhancement. This evaluation process helps the organization to arrange the faculty development programs for further improvement in the performance of the faculty members.[1]

Accreditation Council for Graduate Medical Education (ACGME) develops variety of assessment ''tools'' for performance of faculty members outcomes. Though it is not very much popular in the literature concern with medical and rehabilitation fields, but it is the most useful practice in business sector. The performance evaluation technique focuses on multiple perspectives and levels performance leading to results that are considered to be highly convincing and a powerful phenomenon to bring change in behavior. This feedback also known as multisource feedback, multi rater assessment, peer evaluation and full-circle appraisal. Peer evaluation provides developmental feedback which is always used to assess competency and behavior rather than personality and professionalism.[2]

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One frequently used method for identifying educational needs is the mailed questionnaire. Generally, educational program planners gather initial information about a particular audience and design an appropriate questionnaire to elicit information from that audience regarding its perceived importance of identified topics.[3]

Although the literature related to conducting educational needs, assessment is quite plenteous, specific literature related to the tools and methods which are useful in the process is somewhat less abundant. Randol G. Waters, used the modified Borich Model to describe the educational needs of extension in field, faculty and indentifying the faculty development needs. Researchers would recommend the use of this need assessment model in determining educational needs of similar groups of clients.[4]

This study analyzes the outcomes of peer reviews of faculty members and the outcomes of students' feedback. Before this the general practice was getting feedback from the students or by the faculty member's separately. This particular research includes self assessment by the faculty members themselves, compared with the students' feedback. [5]

Materials and Methods

This comparative cross sectional research survey was conducted among students of Doctor of physical Therapy (DPT), Post-Professional Doctor of physical Therapy (PPDPT), and Master of Science in speech language pathology (MS-SLP), and faculty members at Riphah College of Rehabilitation Science (RCRS), Riphah International University Islamabad. The faculty performance was evaluated for semester Spring 2012 and for the period of 6 months, from January-June 2012. The total sample size was 730, including 700 students and 30 faculty members.

A questionnaire was developed according to likert scale, and after a pilot study on 20 student and 10 faculty member to determine the reliability. The questionnaire was circulated among all the 30 faculty members and 700 students, including 500 undergraduate and 200 post graduate students of all the 3 programs. The details about the study sample are summarized in Table I.

The questionnaire has 10 questions, which covered all of the following 10 important domains for performance of the faculty members:

1. Knowledge of the subject
2. Up-to-date knowledge
3. Communication Skills
4. Students' participation in class
5. Distribution of material among students
6. Punctuality
7. Regularity
8. The use of virtual learning system VLS
9. The use of campus management system CMS
10. Following Islamic Ethical values

The data was analyzed and Wilcoxon (Kruskal-Wallis) was applied at 95% level of significance for all the 3 groups. The group "A" included assessment of the performance of the faculty members done by the students, group "B" done by other faculty members, and group "C" included self assessment done by faculty members. The averages were calculated to determine the overall performance of the faculty members as assessed by themselves, other faculty members, and the by students as well, afterwards the averages of 3 groups were compared.

Results

A total of 730 students and faculty members participated in this research study; majority (77%) was female. Mean age of the undergraduate students was 23, postgraduates 27 and faculty members 30 years. The majority of participants were

from under grade (68%), followed by post grade (27%), and faculty members (4%). The background of the students and faculty members were from physical therapy and speech therapy.

The overall performance of the faculty members was graded as 71% (P=0.015) as evaluated by the students, 77% (P=0.009) as evaluated by other faculty members, and 73% (P=0.011) as evaluated by the faculty members through self assessment. Table-II

Table I: Summary of Study Sample (n=730)

Level	No. of participants	mean age	Gender Distribution	
			Male	Female
Under-graduates	500	23 years	90	410
Post-graduates	200	27years	60	140
Faculty Members	30	30 years	17	13

Table II: Comparison of Overall Faculty Performance (n=730)

Groups	Q-1	Q-2	Q-3	Q-4	Q-5	Q-6	Q-7	Q-8	Q-9	Q-10	Over all Faculty Performance	P-Value
Group-A (Assessment by Students)	75%	70%	72%	66%	76%	70%	68%	69%	72%	70%	71%	0.015
Group-B (peer-Assessment)	70%	80%	80%	75%	77%	85%	75%	76%	79%	77%	77%	0.009
Group-C (Self-Assessment)	80%	71%	65%	85%	72%	71%	70%	67%	80%	65%	73%	0.011

Discussion

Nigel K. Ll. Pope conducted a research study on "The impact of stress in self and peer assessment" and published in a research journal the assessment and evaluation in higher education in 2005. They concluded that the peer assessment and evaluation method is very effective for the evaluation the performance of the students and faculty members.[6]

Keith Topping carries out a comparative cross-sectional survey on "Assessment between Students Colleges and Universities" and published in research journal the Review of Educational Research in 1998. This study strongly supports the peer evaluation method for finding students and faculty outcomes at the colleges and universities level.[7]

Davis and John conducted a comparative cross-sectional research survey on "Comparison of faculty, peer, self, and Nurses Assessment in Obstetrics and Gynecology Residents" and published in a research journal the Obstetrics and Gynecology in 2002. They had evaluated the performance of residents placed in

Obstetrics and Gynecology wards, through self assessment, peer assessment and by the nurses. They concluded that there was no significant difference among the all 3 groups.[8]

F. Dochy and colleagues carries out a review research study on "the use of self, peer, and co-assessment in higher education" and published in an international research journal named the Studies in Higher Education in 1999. They considered the peer review method effective and develop recommendations for educational institutions. They also stated in the conclusion after the completion the research review that peer review method made the students more responsible while responding the evaluation and assessment at the higher education level.[9]

Matthew Ohland and colleagues conducted a review research study on "A Comprehensive Assessment of Team Members Effectiveness: Development of Behaviorally Anchored Scale for Self and Peer Evaluation", and published in a research journal the Academy of Management, Learning, and Education in 2012. They find three studies which supports the effectiveness of peer review method for the evaluation and assessment of the effectiveness team members.[10]

Conclusion

It is concluded that there was no significant difference in the performance of the faculty members, as assessed by the students, themselves, and the other faculty members.

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ORIGINAL ARTICLE

Complications of Diode Laser in Endourological Procedures in Co-morbid Patients

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ABSTRACT

Objective: To determine safety of diode laser by studying post operative complications after endourological procedures in co-morbid patients.

Study Design: A descriptive study.

Place & Duration of Study: Shalamar hospital, Lahore from June 2009 to June 2012.

Materials and Methods: We studied post-operative complications (up to 3 months) in 3 groups (prostatic obstruction, bladder growths ,urethral strictures) of total180 patients with ASA III & IV. We assessed hematuria, UTI, abdominal pain, suprapubic discomfort, urinary retention, dysuria, incomplete procedure, cardiac or respiratory compromise, fluid overload, mortality, catheterization times and mean postoperative hospital stay

Results: In prostate group, mean age was 70.8±8.6 years and follow-up period was 3 months. Complications were: mild transient haematuria in 65 (100%), creamy urine in 50 (77%), urinary tract infection in 25 (38.4%), dysuria in 16 (24.6%), retreatment required in 06 (9.2%), suprapubic discomfort in 3 (4.5%), TURP syndrome in 1 (1.5%) and significant hemorrhage requiring blood transfusion in 1 (1.5%),. In urethral strictures, the complications were: microscopic hematuria in 80 (100%), urinary tract infection in 52 (65%) suprapubic discomfort in 9 (11.2%), dysuria in 6 (7.4%) mild transient hematuria in 5 (6.2%). In bladder growths, the complications were: mild transient haematuria in 30 (85.7%), creamy urine in 19 (54.2%), suprapubic discomfort in 18 (51.`4%), dysuria in 9 (25.7%), urinary UTI in 8 (22.8%) , ablation performed in two sittings in 1 (2.8%). No mortality in any group.

Conclusion: Diode laser is a safe and useful modality in patients with co-morbidities (ASA III and IV).

Key words: *Diode laser, endourology, co-morbidity.*

Introduction

Elderly patients with coexisting medical conditions undergoing complex or major surgery are high-risk. Range of surgery and patient-related factors including ischaemic heart disease, chronic obstructive pulmonary disease (COPD), advanced age, poor exercise tolerance determine the overall risk [1]

Bleeding remains a concern in all endoscopic procedures, like morbidity and mortality for transurethral resection of prostate (TURP) have not changed for decades.[2,3]

Potential advantages of laser therapy over traditional procedures include appreciably good hemostasis, decreased morbidity, minimal cardiac stress, and shorter hospital stay.[4]

High-powered diode laser systems are available for endoscopic procedures.[5] It has a compact size, easy portability, and a potential for lower capital and maintenance costs.[3] The current system (Biolitec) allows a continuous wave mode to a flexible and customizable pulsing regime with side or bare end fire fibre . Diode laser has similar wavelength characteristics to the Nd: YAG laser (Neodymium:yttrium-aluminum-garnett), but scatters less in tissue, high simultaneous absorption in water and hemoglobin and it is postulated to combine high tissue ablative properties with good hemostasis with significantly lower energy consumption[3,6]. Safety measures are similar to Nd: YAG laser.

Clinical data regarding safety of diode laser in endoscopic surgery is not frequently available.

Materials and Methods

We studied the post operative complications (up to 3 months) in 180 patients between

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June 2009 and June 2012 in Shalamar hospital, Lahore. Depending upon diagnosis, patients were divided into 3 groups (with Prostatic obstruction, bladder growths and urethral strictures) and complications in each group were studied.

In all cases of BPH, pharmacological treatment had been tried. Physical examination including digital rectal examination (DRE), Prostate specific antigen (PSA), abdominal ultrasound scan (trans-rectal scan only in case of disagreement between DRE and the abdominal ultrasound scan) were carried out for prostatic obstruction and bladder growth. Retrograde urethrogram was done for urethral strictures. All operations were done in spinal (60 %) or combined spinal/epidural, epidural alone or general anesthesia.)

We used 980 nm Diode laser (Biolitec, Germany) with 1000 µm core optical fibers (side-fire), 600 µm end fire with a spot diameter of 1 mm. The output power ranged from 50 W to 140 W during the surgery. The mean applied energy was 130 ± 70 kJ. Vapo-resection (Coagulation and resection of bigger prostates, vaporization and sample collection for small lesions) was performed using laseroscope / resectoscope of 26 Fr. The strictures were dealt with by vaporizing the tissue when passing, using the contact technique or non-contact mode depending on the characteristics of the tissue. Saline solution was used as irrigation during ablation and 1.5% Glycine during sample collection.

The antibiotic prophylaxis consisted of three intravenous doses of 1g of Cefoperazone /Sulbactam , at induction, at 12 and 24 hrs post operative period respectively. Patients needing anticoagulation were switched over to Enoxaprin 4000 i.u. sub cutaneous injection before the procedure. All procedures were performed by a single experienced surgeon with a dedicated team.

In post operative period, patients were assessed for transient, significant haemorrhage needing transfusion, microscopic hematuria, urinary tract infection, abdominal or flank pain, suprapubic discomfort, urinary retention, dysuria, incomplete procedure, cardiac or respiratory compromise, fluid overload , mortality, catheterization times and mean postoperative hospital stay. Patients were discharged from the hospital within 48 hours when urine was bloodless.

Inclusion Criteria:

Patients from all age groups needing endoscopic laser treatment for BPH, bladder growths, and urethral strictures having

1. Co-morbidities
   a. altered renal function, (Creatinine > 2.0)
   b. COPD
   c. bleeding / clotting disorders with international normalization ratio (INR) >1.5
   d. myocardial dysfunction, ejection fraction up to 30%)
2. American society of Anesthesiologists (ASA) grade III and IV
3. Refused surgical treatment due to high risk

Exclusion criteria:

Patients with ASA grade I & II

Follow up:

Follow up intervals postoperatively in out patient clinic were within 5 days for removal of catheter, 15 days, one month, 2 month and 3 months. Any clinical event, adverse effects and additional interventions or repeat surgery was noted.

For cases of ablation of prostate and bladder growths, follow up intervals were within 5 days for removal of catheter (upto 7 days for some cases of bladder growths), 15 days, one month, 2 month and 3 months.

In case of urethral strictures, the catheter was removed depending upon the severity of the condition and were followed upto 3 months.

Results

Prostate Group: Mean age of patients was 70.8±8.6 years. One patient having prostate >260 gms developed significant post operative haemorrhage and needed transfusion. The patients having prostates >100 gms developed retention within 1 week and were re-operated. Dysuria was moderate, disappeared in all cases by symptomatic treatment within the following two weeks. UTI was noted in patients having indwelling catheter for > 3 months. Patient with TURP syndrome was readmitted and electrolyte imbalance was corrected. Further results are in Table I.

Stricture Urethra group: Microscopic hematuria and gross hematuria both settled within 24 hrs in all patients. Post operative infection was noted in already infected urine which settled by two weeks antibiotics followed by suppressive dose. Further results are in Table II.

Bladder Growth group: Urinary retention occurred only in cases of indwelling catheter > 3 months. Creamy urine lasted for 2-3 months and settled. Dysuria persisting up to 2 weeks was noted in widespread bladder tumours. Further results are in Table III.

Table I. Complications in prostate group (n= 65)

Complication	number of patients	Percentage
Transient hematuria (settled within 4 hrs)	65	100
Sloughy (creamy) urine	50	77
urinary tract infection	25	38.4
Dysuria	16	24.6
urinary retention requiring re-operation	6	9.2
Suprapubic discomfort	3	4.5
Syndrome of fluid absorption	1	1.5
Significant blood loss needing transfusion	3	4.5
Incomplete procedure	0	0
Mortality	0	0

Table II. Complications in Urethral Stricture (n = 80)

Complication	number of patients	Percentage
Microscopic hematuria	80	100
urinary tract infection	52	65
Suprapubic discomfort	9	11.2
Dysuria	6	7.4
Transient mild hematuria (for < 24 hrs)	5	6.25
Significant hemorrhage	0	0
urethral perforations	0	0
Incomplete procedure	0	0
Mortality	0	0

Table III. Complications in bladder growths n = 35

Complication	number of patients	Percentage
Hematuria mild transient (< 24 hrs)	30	85.7%
Sloughy (creamy) urine	19	54.2 %
Suprapubic discomfort	18	51.4 %
Dysuria	9	25.7 %
urinary tract infection	8	22.8 %
Incomplete procedure requiring second sitting	1*	2.8 %
Significant blood loss needing transfusion	0	0
urinary retention requiring re-operation	0	0
Mortality	0	0

Table IV. Mean Hospital stay and catheterization time

Procedure	catheterization time(days)	hospital stay(days)
Ablation of prostate (65)	4±2	2
Resection of bladder growth (35)	4±2.5	1.5
Urethrotomy (80)	2.5±1	1

Discussion

Use of laser for the treatment of BPH and bladder tumours is the most commonly used alternative to TUR to decrease morbidities.[7,8] For Nd:YAG, laser, it required longer catheterization periods because of the longer time required for expelling the necrotic tissue. Reports of long term results with KTP laser are limited.[9] We removed catheter within 3 days because of effective coagulation and hemostasis except for prostatic obstruction with indwelling catheter for > 3months or complicated strictures of posterior and bulbar urethra .

Rapid vaporization and hemostasis is possible by diode laser.[9,10,11]We easily obtained tissues of prostate and bladder growths for biopsy. The architectural pattern in resected tissue was well maintained for histopathological evaluation. An ex vivo study showed that diode laser has a higher tissue ablation capacity than KTP laser, and shorter operative time.[9] Using vapo-resection technique ,we obtained clean sharp cuts with almost blood-less field.

W. Cecchetti et al obtained a bloodless sharp cut and easy vaporization with minimum carbonization and edema in 22 cases. They found diode laser a good compromise between absorption and coagulative effects on the tissue .[11]

Seitz et al treated 10 patients with BPH with diode laser. Ten patients were followed up at 1 month and 8 patients were followed up at 6 and 12 months. No serious postoperative haematuria was reported.[12] We found, mild transient hematuria in almost all patients which settled within 4 hours.

Erol et al (2009) studied 47 patients with diode laser prostatectomy. The commonest complication was mild-moderate irritative symptoms (23%) which resolved within the first two weeks. A late bleeding complication (requiring hospitalisation) was encountered in one patient at 4 weeks. Mean operative time was 53 minutes.[13]

Chen et al (2010) treated 55 patients of BPH. They reported 10 patients with transient dysuria. Acute urinary retention in two men was resolved by removal of sloughed tissue via TURP. Two patients underwent TURP due to insufficient vaporisation or regrowth of prostatic tissue (reoperation rate 7%).

The three studies (Seitz et al; Erol et al; Chen et al) reported no serious intraoperative complications or postoperative haematuria. Lengths of hospital stay were 4.7 (SD 2.3) days in Seitz et al (2007) and 2.8 (SD 1.8) days in Chen et al (2010).[12,14] In our study, almost all patients were discharged within 48 hours after surgery.Clemente Ramos and Luis Miguel evaluated [15] diode laser treatment of BPH, focused on the peri-operative morbidity. They found prostate vaporization effective with minimal morbidity.[15]

The application of lasers in treating urologic disorders has gained widespread clinical acceptance in multiple surgical indications.15 Safety has also been demonstrated in patients with large prostates and patients receiving anti coagulant therapy or in retention.[16]

Conclusion

The early results showed a virtually bloodless surgery with sharp cut. With acceptable complication rate, diode laser is relatively safe and useful modality in patients with co-morbidities (renal failure, Chronic obstructive pulmonary disease, myocardial dysfunction, (ASA III & IV).

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ORIGINAL ARTICLE

Emergency Peripartum Hysterectomy in Pakistan Railway Teaching Hospital Rawalpindi: Eleven Years Review

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ABSTRACT

Background: Emergency Peripartum Hysterectomy (EPH) is a major surgical procedure. There appears to be a rise in the rate of emergency peripartum hysterectomy (EPH) in the developed world. Peripartum hysterectomy is high risk but a life saving operation. It is usually associated with significant maternal and fetal morbidity and mortality. Obstetricians should identify patients at risk and anticipate the complications, as early intervention and proper management results in optimal outcome.

Objective: To determine the incidence, indications, risk factors, complications and management of EPH over the last eleven years.

Study Design: A descriptive study.

Place and Duration of Study: All cases of EPH performed in the period between January 2001 and December 2011 were included in the study. Study was conducted at Railway Teaching Hospital, Rawalpindi (in northern Pakistan).

Materials and Methods: Data of all the cases of EPH cases operated during the study period was collected from the hospital obstetric record. Data of basic demographics, mode of delivery, maternal and fetal outcome along with associated complications was collected and entered into the Statistical Package for Social Sciences version 14.0 (SPSS Inc., Chicago, IL, USA) for further analysis. Indications, pre-op planning, type of operation, emergency decision, blood loss, transfusion, complications, were compared and cross-tabulated. Statistical analysis included: Chi-square and Fisher exact tests, where appropriate, and two-sample t test.

Results: Total deliveries were 13560 in 11 years. Twenty Six EPH cases were performed among deliveries, giving an incidence of 1.8 per 1000 deliveries i.e. one in 566 deliveries. The indications were uterine atony (34.61%), ruptured uterus (23.07%) and cervical/vaginal tears (11.53%), placenta praevia (11.53%), invasive placental adhesion [accreta, increta, percreta (11.53%)]. A significant association between previous uterine surgery and abnormal placentation was shown (p=0.02), especially those with previous caesarean (p=0.003). One maternal and six perinatal mortalities were recorded. Four perinatal deaths were of non booked patients, handled by traditional birth attendants/private clinics. Out of two perinatal deaths of booked patients, one was pre-term and other was delivered by forceps. Maternal morbidity was prevalent, including twenty three intensive care admissions, three disseminated intravascular coagulopathies, three bladder injuries, three re-explorations, multiple blood, FFPs & platelet transfusions, two pulmonary embolism & one cardio- respiratory failure. Maternal death was of non booked patient with previous scar, home delivery, uterine rupture and brought to hospital with un-recordable BP and very weak pulse.

Conclusions: Incidence of peri-partum hysterectomy is increasing. It is a major operation, and almost always an emergency with significant blood loss. An early decision should be made to save life of the patient and prevent complications. The most important risk factor for peripartum hysterectomy in our patients is hemorrhage, most notably caused by uterine atony, uterine rupture, placenta previa and abnormally adherent placenta.

Keywords: *Peripartum hysterectomy, uterine atony, maternal morbidity, perinatal mortality*

Introduction

Women are the pillars of social & economic development. Their health & well being is vital for future generations. An estimated 3,58000 maternal deaths occurred worldwide in 2008. (WHO, UNICEF, UNFPA and the World Bank: 2010. Trends in Maternal Mortality: 1990 to 2008). Approximately one-half of these deaths are preventable.

Peripartum hysterectomy is removal of pregnant uterus after 20 weeks gestation at or near time of delivery (performed within 24 hours of a delivery) but within the first 6 weeks postpartum. It is a technically difficult but life saving procedure especially

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when performed as an emergency. Its complications are 4 times than those of an elective procedure. Intraoperative and postoperative complications are much more than that of gynecological hysterectomy. Its Mortality is 5 times greater than an elective procedure.

Life-threatening haemorrhage resulting from uterine rupture and atony has become rare events in the developed world. But it is still a major problem in obstetric care in developing countries[1]. Peripartum hysterectomy may be performed in emergency as a last resort to save the life of a woman with persistent bleeding or as planned procedure, often in conjunction with cesarean delivery. It is performed in 0.05 to 0.1 percent of deliveries.

It is one of the life saving surgical procedures performed at the Department of Obstetrics and Gynaecology of the Railway Teaching Hospital. Moreover, it is considered one of the most serious complications in obstetrics with adverse outcomes for women.[2]

The main complications related to emergency peripartum hysterectomy include Disseminated Intravascular Coagulation (DIC), transfusions[3], need for re-laparotomy because of persistent bleeding, febrile morbidity, major surgical complications or maternal death.[4]

Many studies have estimated an incidence rate of 0.8 and 1.5 per 1,000 deliveries in United States.[5] Incidence is higher in developing countries due to decrease compliance of patients and lack of availability and utilization of antenatal care services especially in the rural areas. There also is a rise of EPH in the developing world.[6] Some risk factors for peripartum hysterectomy have been identified, including prior cesarean delivery, mode of delivery or multiple births. A prior cesarean delivery is associated with an increased rate of abnormal placentation, including placenta previa, accreta & increta in subsequent pregnancies.[7]

The purpose of this study was to determine the incidence of peripartum hysterectomy, the indications, risk factors, the perinatal and maternal outcomes and the complications associated with the procedure at the Railway Teaching Hospital, Rawalpindi, Pakistan. This would help highlight the importance of lack of availability and utilization of antenatal services. Identify avoidable factors and the need to organize health care services. It can be a contribution towards improvement of maternal and fetal outcome

Materials and Methods

Objective of the study was to determine the incidence, indications, maternal characteristics, risk factors, maternal and perinatal outcomes and complications of Emergency Peripartum hysterectomy (EPH) at Railway Teaching Hospital, Rawalpindi. These hysterectomies were performed by consultants with negligible differences in their operating techniques.

This was a descriptive study, carried out at Gyne /Obs department of Pakistran Railway Teaching Hospital, Islamic International medical college, Rawalpindi.from January 01, 2001 to December 31, 2011. Pakistran Railway Teaching Hospital is located at the junction of Rawalpindi & Islamabad (Capital of Pakistan), which are twin cities. A large number of Afghan refugees of different castes and tribes; who migrated to Pakistan got settled in these localities. Our hospital is one of the undergraduate and post graduate teaching hospitals.

Data of all the EPH cases operated were obtained from the hospital obstetric record. Each case record was analyzed in details with special emphasis on maternal characteristics demographic data (age, parity, booked or emergency case etc.), indications for hysterectomy (hysterectomy for any indication during pregnancy, labor

and puerperium has been included), type of operation performed, problems encountered during operation, maternal & peri-natal outcome, morbidity, mortality & causes of maternal morbidity and mortality were studied.

During this period there were 13,560 deliveries, out of which 11,960 were vaginal deliveries and 682 caesarean sections were performed. During the study period, 26 women were noted to have undergone an emergency peripartum hysterectomy, giving an incidence is 1.8 per 1000 deliveries i.e. 1 in 566 deliveries. Data regarding their basic demographics, mode of delivery, maternal and fetal outcome, along with associated complications was then collected and entered into a database developed in Microsoft Access 2000. This was then imported into the Statistical Package for Social Sciences version 17.0 (SPSS Inc., Chicago, IL, USA) for statistical analysis.

Results

As noted above, 26 women were identified who underwent an emergency peripartum hysterectomy from a total of 13,560 deliveries (Table I). Out of which 11,960 were vaginal deliveries and 682 had caesarean sections. Therefore, the incidence of peripartum hysterectomy is 1.8 per 1000 deliveries i.e. 1 in 566 deliveries. Out of 26 women who underwent emergency peripartum hysterectomy, eighteen cases were non booked (73.1%) & only eight were booked (26.8%). It means that majority of these patients had received no antenatal care prior to their presentation to the hospital. This is really alarming situation. Majority of these patients belonged to very low socio-economic group.

As shown in Table II, only five patients were primi-paras. Most of the patients were having 2-4 children (65%). Grand-multiparas were 21.9%.

As shown in Table III, the main indication for peripartum hysterectomy was severe haemorrhage caused by uterine atony 09 (34.61%). Other indications included ruptured uterus 60 (23.07%); morbidly adherent placenta 03 (11.53%); placenta praevia 03 (11.53%); cervical/vaginal tears 03 (11.53%) and two patients reported with DIC (7.69%).

In our series of patients, the commonest

Table I: No. of deliveries, caesarean hysterectomy & booking (n=13560)

No of deliveries, caesarean hysterectomy & booking	
Total deliveries	13560
Total vaginal deliveries	11,960
Total Caesarean deliveries	682
Total EPH	26
Incidence of EPH	1.8 per 1000 deliveries
Booked	08/ 26
Non-booked	18 / 26

Table II: Age distribution of the patients & their percentages(n=26)

Age (yrs)	No of patients	Percentage
20-25	05	19.23%
26-30	08	30.76%
31-35	10	38.46%
36-42	03	11.53%
Total	26	100%

Table III: Outline of indications of EPH (n=26)

Indications	No. of patients	Percentage
Uterine atony	09	34.61
Ruptured uterus	06	23.07
Morbidly adherent placenta	03	11.53
Placenta praevia	03	11.53
Cervical/ vaginal tears	03	11.53
DIC	02	7.69
Total	26	100

indication for an EPH was uterine rupture in 6 (23.07%) cases. Two of these cases were due to previous one scar in labour. One each is due to accidental haemorrhage, prolonged labour, instrumental delivery and oxytocin abuse. Some cases appeared to be related to presentation of multipara and grand mutipara to traditional birth attendants (TBAs). Cases of obstructed labor are due to malpresentation and cephalopelvic disproportion neglected by TBAs (or "Dai"). Both the patients of lower segment caesarean section were tried for vaginal birth after caesaren (VBAC) at home by TBAs.

In majority of patients of our study, EPH was performed because of postpartum hemorrhage (PPH) mainly due to uterine atony. Other indications were abruption plcentae with covualaire uterus, and placenta percreta. These findings are very much similar to a study from the province of Sindh, Pakistan, where EPH were mainly performed due to uterine rupture.[8]

There was one (3.84%) maternal death. This patient died due to Cardio-respiratory failure.

Twelve (44%) patients stayed for 12 days or less, 11 (40%) for 13-22 days and 2 stayed for 24-35 days. The hospital stay of these patients ranged from 7 to 35 days, with a mean of 14 days. This represents huge financial burden on the patients and health care system of the country with serious economic and social consequences.

Parity of patients ranged from 0–13. One patient was primigravida, required hysterectomy due to abnormally adherent placenta, Three were requiring EPH due to rupture of a previous caesarean scar; while the rest were multiparas. Sixty nine percent of patients were grand multipara (≡ 5 previous deliveries).

Total abdominal hysterectomy was performed on 17 patients out of 26; nine underwent subtotal hysterectomies. Subtotal hysterectomy is also an acceptable option in technically difficult situations.[9]

Almost all surgeries were performed in emergency (24/26); only 2 were performed as elective procedure. Majority of the complications noted were infections (wound infection, fever and urinary tract infection) followed by complications related to the surgery itself. All patients who underwent EPH received blood transfusion during or in the immediate postoperative period.

There were 8 (30.77%) perinatal deaths noted in this series of patients. Six were

Table IV: Maternal morbidity and mortality in patients with EPH (n=46)

Causes	No. of cases	Percentage
Febrile morbidity	13	50.00%
Wound infection	09	34.61%
Septicemia	03	11.54%
Paralytic ileus	01	03.84%
Urinary tract infection	05	19.23%
Bladder injury	03	11.54%
Ureteric injury	01	03.84%
Vesico-vaginal fistula	01	03.84%
Pneumonitis	01	03.84%
Thrombo-embolism	02	07.69%
DIC	03	11.54%
Repeat laparotomy for bleeding	03	11.54%
Mortality (cardio-resp failure)	01	03.84%

Table V: Fetal and neonatal outcomes (n=26)

Neonatal Outcome	No. of cases	Percentage
Peri-natal deaths	08	30.77%
Neonatal sepsis	15	57.69%
Anaemia	11	42.31%
Neo-natal jaundice	12	46.15%
Neonatal hypoxia	10	38.46%

stillborn, 4 of which were due to a ruptured uterus and 2 were because of abruptio placentae. There were two neonatal deaths due to neonatal sepsis and aspiration pneumonia.

Discussion

In our study 26 women underwent EPH from a total of 13,560 deliveries. Out of these, 11960 were vaginal deliveries and 682 caesarean sections. Therefore, the incidence of EPH in our hospital is 1.8 per 1000 deliveries i.e. 1 in 566 deliveries. Whereas, in a study conducted in Turkey, 34 cases of EPH were performed over a 10-year period.[10] Similarly, in a study from New York, 48 cases of peripartum hysterectomy were performed over 8-year period; with an incidence of 1.4 per 1000 births.[11]

Compared to a study performed in Australia where only 33 EPH were documented among 33,998 births over a 10-year period, the incidence documented was 0.85 per 1000 births; our rate of EPH is approximately 2-fold higher.[12]

Our study is representing an alarmingly high number of EPH at a tertiary care hospital of a developed city of Pakistan

There is an increasing trend in EPH 1980s to 2013. We have found three studies which reported an increased trend of EPH. An increased incidence of EPH from 1998 to 2003 was also found by Whiteman et al; as reported earlier.

A Danish study reported a statistically significant risk of EPH in 1995-2004.

While Calgary Health region of Canada found no statistically significant difference in incidence rates from 1999-2006. But, the number of EPH was not very sufficient to interpret the results.[13]

Hence, all these rates are not accurate estimates and comparisons could only become significant when the populations would be similar in demographic factors such as age etc, time periods being evaluated are similar and management protocols would be evidence based.

Our results are revealing that the most important cause for EPH is hemorrhage most importantly due to uterine atony, uterine rupture & retained placenta, findings consistent with previous reports.[15]

The causes of EPH noted in our patients are very much different from the developed countries where abnormal placentation resulting in hemorrhage was the most common cause. A study publised by Netherlands, found that the main cause for EPH was placenta accreta (50%). Uterine atony was found in 27% of cases.[16] A Turkish study noted that uterine rupture was the cause in almost 21% of the cases & uterine atony was responsible in 42% of the cases.[17] A study conducted in Saudi Arabia and another of Korea, also revealed that uterine atony is the most common cause. [18]

Despite practicing evidence based medical advances, regular drills and improvement of protocols; hemorrhage continues to be an important contributor to maternal morbidity and mortality. In our study, we tried to explore factors that could be recognized antenatally and could be rectified with in time preventative measure. Abnormal placentation has also been consistently documented in other studies to be associated with previous uterine surgeries.[19]

These life-threatening abnormal placental complications require aggressive blood transfusion, subsequent bleeding complications, hysterectomy, and longer maternal hospital stays.[20]

With advanced radiological facilities, pre-hand diagnosis of abnormal placentation can guide clinicians to plan for delivery with uterotonics, transfusion services, uterine balloon compression devices, interventional radiologists and standby of surgeons.[21]

Involvement of interventional radiologist and invasive treatment must be decided within 30 minutes if other measures have

failed.

Assisted vaginal delivery has also been related to risk of EPH.[22]

A study indicated the association of damage to cervical/ vaginal tissues, resulting in hemorrhage and leading to hysterectomy.[23]

Another important hypothesis is about uterine scarring, especially with cesarean deliveries, also increases the risk of EPH, even without abnormally adherent placenta/ placenta previa.Multiple cesarean sections, as well as VBAC were also found to be associated with EPH.[24]

In our study multiple gestation could not be proved to be significantly associated with EPH, as has been described in some studies. Some reported that multiple gestations had significantly increased risk of EPH e.g. Francois et al. According to these studies, tocolysis require for preterm labour and overdistended uterus by more than one fetus is a major facto towards uterine atony and hemorrhage. However, they failed to adjust the confounding factors such gestational age & mode of delivery etc.[25]

Unfortunately our study has some limitations also. The most significant is that our inferences depend on the hospital records, their accuracy about the diagnoses and management and records or notes on birth certificates and discharge forms. We tried our best to countercheck and recheck the records about diagnosis and management, birth certificates, to reduce biased classification of different risk factors and confounders, as also suggested by some other studies.[26,27]

For example the diagnosis of "retained placenta" limited the options and make it difficult to distinguish between different abnormally adherent placenta e.g. placenta accreta, increta or percreta. Without doing a review of patients' notes, we were unable to determine the indication for EPH, the amount and the type of hemorrhage (antepartum, intrapartum, postpartum).

Lastly, the number of cases for some of the factors that were studied was relatively small.

Conclusions

Some of the very important inferences are:

- Incidence of EPH is significantly high and the most important indication of EPH is hemorrhage mainly due to uterine atony, uterine rupture, placenta previa & abnormally adherent placenta.
- Important risk factors to be considered are multiparity, previously scarred uterus, non booked patients & deliveries carried out by TBA.
- Significant maternal and perinatal morbidity and mortality is the main outcome of EPH e.g. ICU admissions, arrangement for blood & its components, management of coagulopathies/thromboembolism & injuries of adjacent visceras results in huge psychological & financial burden on the patient, family & society.

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SHORT COMMUNICATION

Clinical Audit and Its Role in the Practice of Dentistry

Muhammad Humza Bin Saeed, Shakeel Kazmi, Faisal Moeen, Yusuf Bhatti

ABSTRACT

Audit is the practice of ensuring good professional practice, which has been practiced in the various fields of professional world for a long time. The concept of clinical auditing which primarily ensures quality provision of equitable, ethical healthcare is still a new concept in the field of health sciences. In dentistry, this concept is even more recent, especially in the developing world. Many dental negligence cases go unaccounted for in various parts of the developing world.

This article outlines the main concepts of clinical audit, explaining what exactly is clinical audit and how may it be implemented in the practice of dentistry.

Key Words: *Clinical Audit, Clinical Governance, Dental Audit, Dental Practice.*

Introduction

Over the past few decades, public opinion and involvement in modern health care has been increasing continuously, so much so that today, in the developed countries, it is unethical for a clinician to formulate a treatment plan without taking the opinion of the patient under consideration. A specific growing concern among the public is that health care brings more harm than good. Several cases involving nurse, doctors and in some instances, dentists became quite popular coming under the light of the media and have brought about change in health care policies. Some examples of these are the Bristol babies case – where about 90 children were reported to have died, owing to sub-standard care by the doctors; the Alder Hey Hospital case and the Harold Shipman case.[1] It is true that these individuals represent a very small proportion of health professionals. However, such negligence should not be left unchecked and a system to monitor and assess quality health care needs to be present. Such systems have appeared over the past few decades, to provide excellent quality health care to the public.[2]

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Defining Clinical Audit

1. Audit – Audit has been described in different ways, depending on what is desired out of the whole process. To put it simply, it is an extension of good clinical practice. A more discrete way of describing audit would be that "it is the systematic and critical analysis of the quality of medical care (i.e. critical analysis review)."[3]
2. Peer Review – In this method, a group of clinicians hold a meeting where they either discuss clinical cases or other protocols regarding the setting of the clinical practice e.g. guidelines for recall intervals in dentistry, dental radiography guidelines or cross-infection control protocols. A peer review group consists of between four to eight dentists from at least two different practices.[4] A full and honest discussion is carried out, where it is discussed whether certain clinical scenarios were managed appropriately or not; and/or whether certain guidelines are appropriate and evidence-based. Any change required in the standards for assessing clinical protocols; or a need for staff training and education may be identified. It is recommended that the review should be completed in eight sessions (of at least two and a half hours) within nine months.[4]

3. Clinical Audit – The clinical audit scheme for dentistry was introduced in the UK in 1995. The purpose of clinical audit was to give the dental practitioners to build upon their peer review activities, going further by identifying standards that they could assess their clinical practice against.[4] Measurement tools or assessment methods are drafted against which the clinicians can go back and assess their own practice settings. They evaluate their own personal clinical settings, and if there are any shortcomings, a plan to change the practice to cater for the respective drawbacks is implemented. Such changes, and the evaluation and monitoring processes are then discussed over the next meetings.

The South West Regional Health Authority in the United Kingdom has defined medical audit from the above mentioned perspective as follows:

"Medical audit is a systematic approach to the peer review of medical care in order to identify opportunities for improvement and to provide a mechanism for bringing them about. It complements and subsequently overlaps financial audit, utilisation review and resource management but it differs in that its purpose is primarily clinical rather than managerial."

Clinical audit can be viewed from the perspective of the health professionals and/or the patients. The desired outcome of these groups would be more or less the same – making efforts for the provision of effective health care. From the perspective of the planners; managers and/or administrators of health care, clinical audit or clinical governance is more of a quality assurance review procedure to ensure that the optimal clinical services are being provided to the public in a manner acceptable to them, in a time and cost-efficient way.

Clinical audit from the perspective of doctors and/or patients

Medical audit is the term used to describe systematic and critical analysis of clinical procedures as carried out by doctors, in order to evaluate the procedures that doctors do. The key elements of medical auditing, as described by Leeman[3], are as follows:

i. Attaining the objectives of the system – this involves achieving the aims and obtaining the desired outcome. The interest of the doctors is to achieve the best clinical results and to fulfil the population's normative needs (the needs of an individual or population as described by a health professional: a doctor or a dentist).[5] The people would be more interested in having a health service that is accessible, accommodating, affordable and acceptable to them.[6] It then becomes the role of the auditing procedure to see to the attainment of these objectives.
ii. Efficiency – As described by Muir and Gray,[7] efficiency is in doing things the right way. This means that the policy objectives are obtained using a process, which uses resources (money, staff, and time) in the most optimal manner.
iii. Effectiveness – As described by Muir and Gray,[7] effectiveness is doing the right things. This implies choosing the process that obtains the best possible results.
iv. Professional assessment of services – This involves judging against a performance indicator. Various protocols can be assessed according to different guidelines, such as those set by the National Institute of Clinical Excellence (NICE)[8] e.g. following the NICE guidelines for following the protocol for third molar extractions or for patient routine recall intervals.
v. Consumer demands – The needs of the

people (felt and expressed needs) should be addressed in a quality health care service. A health need assessment would assist in this purpose.

vi. Consumer complaints – A system to record both verbal and written complaints should be present. Suggestion and complaint boxes and patient satisfaction surveys can be useful in this regard. A dental practice adviser might be hired for this very purpose as well.[9]

The above mentioned definition clearly gives the concept of clinical auditing not being a judgemental, management tool used for financial auditing threatening the practice with strict, disciplinary measures; but rather a methodical analysis of clinical procedures and setting, assessing them against specified measurement tools; assessing changes to maintain an agreeable, accepted standards, along with periodic evaluation and monitoring.

Clinical Audit from the perspective of planner, administrators and/or managers

Administrators view clinical practices from a quality assurance angle. Clinical governance, as described by the NHS Quality Improvement Scotland (2005) is 'the system through which NHS organisations are responsible for continuously monitoring and improving the quality of their care and services and safeguarding high standards of care and services.'

The UK Department of Health's definition (1998) is quite similar to the one above, describing clinical governance as 'a framework through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding standards of care by creating an environment in which excellence in clinical care will flourish.[10]

These definitions differ from the earlier mentioned medical audit definitions in that the medical audit concept was more of an internal assessment and monitoring cycle, whereas clinical governance takes a stance on accountability, excellence in care and quality assurance – with possible influence externally from outside the service possibly playing a role.

However, the concept of clinical audit held by the administrators and the health clinicians are not mutually exclusive or independent of each other. They should, rather, complement each other. Accountability and quality assurance checks within an internally based system, improving the quality of the clinical settings. However, an approach that is threatening in itself would not be welcomed by clinicians.

Clinical Audit in Dentistry

Maidment modified the definition given by the UK Department of Health[7] to describe clinical audit in dentistry as 'a framework through which dental practices are held accountable for continuously improving the quality of services and safeguarding high standards of care by creating an environment in which excellence in clinical care flourishes.[9]

The public outcry and mistrust of the general population when it comes to health care services, resulting from cases of negligence, cannot and should not be denied or ignored. On analysis of these cases, it can be seen that in most of these cases early warnings were unnoticed or in the worst case scenario, ignored. A chain of events leads to complaining and in some cases, serious litigation issues. These issues, as we know, are not only restricted to medical care but affect dentistry as well. In light of all these issues, a quality assurance or clinical auditing mechanism needs to be present to monitor any change or negligence that might be taking place to achieve the set dental standards.[9]

Clinical dental settings and procedures should be following certain standards, such

as the guidelines drawn out by NICE for various protocols. To assess whether these standards are being practiced and maintained, a clinical governance procedure falls right into place.

Role of clinical audit in implementing improvement in the Dental Practice

Several authors have addressed the issue of implementing clinical audit in the dental practice; which has more recently formed a cornerstone to the practice of clinical governance in the dental practice setting. Using Donabedian's quality assurance model8 of structure, process and outcome, they have developed models to show how clinical audit could be implemented in dental practice [9],[11].

Structure

Under structure, administrative issues are addressed. A situational analysis is carried out to have an overview of the practice, describing the organisation of the practice; the staff and their distribution; the resources available; any quality assurance systems that are in place and the managerial structure of the practice.

Process

Clinical procedures, risk management protocols, cross-infection control mechanisms, staff management and responsibilities, implementation of quality assurance protocols, monitoring and evaluation systems should be analysed. This involves all the steps involved from the point a patient is received in the practice till he is discharged after treatment.[2] Examples can be taking proper clinical notes and keeping a record of them; having a system for recording the complaints – verbal and written- by the patients and reviewing these complaints in the dental practice meetings, with the objective of implementing any changes in the practice to minimise future complaints; recording all adverse events cases to minimise the risk of any such event occurring in the future; and having continuing professional development training in place for the staff.[11]

Outcome

Although assessing the outcome in dental practice is a challenging and difficult task, it is impossible and clinical audit is an important tool to assess outcome.[9] An outcome measure in a dental setting is an indicator of the effectiveness of the clinical intervention – whether the proposed treatment plan had the desired effect on the patient's health or not. 'Heath gain' is used to describe the benefit that the patient receives from the treatment – these benefits are not only physical but emotional as well.[3] To assess the clinical effectiveness of any intervention, clearly defined clinical performance indicators should be used and any corrective or preventive actions put into place accordingly.[11] Patient satisfaction surveys can help in assessing the emotional benefits of the proposed treatment.

The above mentioned points are appropriately summarised in the Department of Health's description of clinical audit as encouraging 'individual dental practitioners to self-examine different aspects of their practice, to implement improvements where the need is identified and to re-examine from time to time, those areas which have been audited to ensure that a high quality of service is being maintained or even further maintained.[10]

A Clinical example of clinical audit in practice[12]

An excellent example of clinical auditing in dental practice has been provided by Moosajee and Gibson.[12] They carried out an audit project to evaluate the implementation and monitoring of dental recall intervals' protocols of three different dentists. They based their audit model on Donabedian's quality assurance model as well. They initially carried out a retrospective study assessing the level of the implementation of the protocols in the three different practices

using patient records to assess process and outcome. The results turned out to be disappointing. Henceforth, they discussed these results and the NICE guidelines with the clinicians by having meetings. Changes were discussed and another review was carried out a month later. Another round of meetings was arranged with the three dentists and the same procedure as before was repeated. Another review was carried after another month and by this time; all three dentists had achieved 100 percent results.

Although this was an excellent study on clinical audit, no control groups were used. The selection of dentists was not random. This was a longitudinal study. A randomised control trial would have been on a higher level on the hierarchy of evidence, giving the research much more credibility.

Conclusion

To sum it up, clinical audit is required for the assessment of good quality dental practice and to ensure that quality dental health care is provided to the public. It is important to prevent any unnecessary litigation due to poor dental practice and clinical auditing plays a very important role in this regard. To put it, simply: clinical audit is about changing the way we do things – for the better.

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