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CONTENTS

EDITORIAL

- Noise Induced Hearing Loss in Karachi: An Ignorant Problem **1**
Iqbal Hussain Udaipurwala

REVIEW ARTICLE

- Autism: A Silent Cry for Help **3**
Rabia Arshad

ORIGINAL ARTICLES

1. Survival and Causes of Failed Amalgam Restorations **8**
Shama Asghar, Farheen Fatima
2. Tuberculous Empyema Thoracic - Surgical Perspective **12**
Rizwan Aziz Memon, Syed Ali Arsalan, Ali Raza Uraizee,
Jawed Ahmed Memon, Aneel Roy Bhagwani, Imroz Arif Farhan
3. Role of Amaltas and Dandasa in Controlling Biofilm Formation of Streptococcus Sangius **16**
Naveed Faraz, Sehrish, Sajid Abbas
4. Audit of Perinatal Mortality at Jinnah Postgraduate Medical Centre Karachi **20**
Razia Korejo, Shazia Naseeb, Haleema Yasmin, Shakeel Ahmed

MEDICAL EDUCATION

- Contextual Learning in Adult Education **25**
Susan Imel

COMMENTARY

- Mandate of Establishing an Ethical Review Committee **27**
Ambreen Usmani, Zia Ul Islam, Syed Tipu Sultan

STUDENT CORNER

- Preclinical Ward Teaching: Student's Perspective **30**
Tehreem Fatima, Zunaira Batool

CASE REPORT

- Periorbital Necrotizing Fasciitis **33**
Kaleem Ullah, Tahira Zamir

LETTER TO EDITOR

- Millennium Development Goal-4 for Reducing Child Mortality- Are We on the Right Track? **36**
Shakeel Ahmed

JBUMDC INSTRUCTION TO AUTHORS

37

EDITORIAL

Noise Induced Hearing Loss in Karachi: An Ignorant Problem

Iqbal Hussain Udaipurwala

Pakistan has a population of over 183 million and it is the world's sixth-most-populous country¹. Karachi is the biggest and most populous metropolitan city of Pakistan with an estimated population of over 23.5 million people as reported in 2013. The approximate area of Karachi is 3,527 square km (1,362 square mile) resulting in a density of more than 6,000 people per square kilometer (15,500 per square mile)². It is the 3rd-largest city in the world by population within city limits, the 7th largest urban agglomeration in the world and the largest city in the Muslim world. Pakistan's current urban population has expanded over seven fold as compared to population in 1950. Like any major metropolitan city of the world, Karachi has also many health related problems. Among them one of the important but almost ignorant health problem is 'noise induced hearing loss'.

Noise is un-wanted, non-harmonic, un-pleasant and very high amplitude sound. From the ancient time, the hammer of professional black smith is believed to cause and start noise induced hearing loss. Noise is known to be one of the environmental and occupational hazard listed in the Factory and Machinery Act 1967³. Hearing loss that is caused by noise exposure due to recreational or non-occupational activities is termed as 'sociocusis' while the hearing loss due to injurious noise at workplace is called 'occupational noise induced hearing loss'. Environmental noise is a common and preventable cause of hearing loss in industrialized societies. Hearing loss may also lead to abnormal behavior like anxiety, mood disorders, personality disorders, schizophrenia and communication breakdown. Firstly, the threat of loss of employment may convince people to remain in the environment with noises higher than they would otherwise tolerate. Secondly in the workplace, high level of noise may be sustained on a regular basis for many hours a day for over years and years.

Karachites are exposed to all types of noises and few of the common types include: 1: Factory and industrial noise, 2: Traffic and transportation noise, 3: Building and civil work noise, 4: Social gathering noise, 5: Road side engineering noise, 6: Firearms and violence noise etc.

Occupational noise-induced hearing loss is a worldwide problem and contributes 16% of hearing loss among

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adults ranging from 7% to 21% in various regions being higher in the developing countries⁴. Karachi has two large industrial zones with thousands of small to heavy industries. Many studies have been done on occupational noise induced hearing loss in different factories and industries of Karachi. According to one study conducted among the textile workers of weaving unit in Karachi, the sound level in these industrial units was in the level of 88.4 to 104 dB, which is far above the acceptable limit of 85 dB⁵. Furthermore only 54.8% of the workers were using ear protection devices and 22.5% did not responded well on whisper test in this study. In another study which was conducted on 50 workers of Karachi Shipyard and Engineering Works showed that all of the workers had some degree of sensori-neural hearing loss on pure tone audiogram where noise level was above 85 dB and none of the worker was using ear protection device⁶. Karachi is a huge mega city with an international airport and a very busy sea port. Total length of all the roads in Karachi is approximately 8,000 km with around 1.8 million vehicles which is growing with 9% increase per year⁷. Karachi port has 30 dry cargo and 3 liquid cargo handling berths which facilitates around 1600 ships annually⁸. Karachi airport is a busy international airport with a flight capacity of 15 flights per hour⁹. All these transportation activities are generating a lot of noises which are injurious to people of Karachi in general but workers in these areas are especially prone to develop noise induced hearing loss. Rickshaw is a popular tri-wheeler public transport in Karachi which generates a lot of noise as most of the rickshaw drivers remove the silencer from their rickshaw. In the past few years, the number of rickshaws has increased many fold as it is the most cheapest transport for the Karachiites. In addition excessive use of horn (especially pressure horn) is very common by the drivers of big buses, trucks and taxis. The vehicle noise is not affecting the drivers and passengers only, it is also affecting roadside hawkers, shopkeepers and residents. A study conducted on 51 rickshaw drivers who were all below 50 years of age and engaged in this profession for more than 5 years, showed sensori-neural deafness in most of the cases¹⁰. In another study, hearing threshold of rickshaw drivers were compared to taxi drivers in Karachi which showed that rickshaw drivers were 3 times more prone for hearing loss, 2 times more prone for tinnitus and 2.5 times more prone for difficulty in telephonic conversation¹¹. In a similar way, another study conducted on the workers of Pakistan National Shipping Corporation (PNSC), showed presence of 19% of sensori-neural deafness specially at

around 4000 Hz in their permanent workers¹². Aviation workers related with airport and aircrafts in Karachi were compared to similar age and gender related villagers, showed a difference of hearing threshold of about 30 dB in two groups¹³. All these studies are showing that noise induced hearing loss is a serious problem for Karachi but very little has been done for its education, prevention and treatment.

Noise induced hearing loss is not only limited to the workers of factories and transport related fields, almost every individual of Karachi is under this risk due to increasing building and civil work, social and religious gathering using heavy speakers, road side engineering works and now a days by firearm and bomb blast noises. Wedding in our region is getting noisier and noisier every day by the arrangements of loud music and by the use of firearms and fireworks on this occasion. There is an increasing trend of listening to music during work and studies by headphones and frequently attending musical concerts. However, all these injurious effects of noise are preventable. Suggestions and recommendations that can prevent this ailment are:

a) Standard methods of identification of hazardous level of noise should be adopted in industries, sea ports, airports, public places and road sides, b) Make plans to improve engineering technology to decrease the noise of machines, vehicles and specially rickshaws by using proper silencers, c) Recording of hearing threshold level of every person should be compulsory at the time of employment and at regular interval in all the above mentioned places of work, d) Health insurance should be compulsory for compensation of affected workers, e) Alternate jobs should be offered to the affected workers, f) Provide hearing protective devices such as the ear plugs and ear muffs to workers, g) Public awareness about this problem should be highlighted in a proper way through every available resource including electronic media, print media, seminars etc.

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Autism: A Silent Cry For Help

Rabia Arshad

ABSTRACT:

"Autism" or "autism spectrum disorder" is a disorder characterized by deficit in social interactions and communication with restricted interest usually recognized by the age of 2 years. Various causes have been linked with autism such as genetic, environmental, vaccination etc. There are many signs and symptoms of this disorder. Multiple therapies are available to groom these children so that they can lead a normal independent life. Electronic databases as PubMed, Google.com and Google scholar were searched by using key words and phrases such as autism, autistic behaviors, autism spectrum disorders, speech therapy, occupational therapy and social deficit disorders. Literature search of abstracts, original articles, review articles and case studies published within past 10 years (Sept 2004- Sept 2014) was carried out through the mentioned search engines. Thus Autism is a neuro-deficit disorder. Affected children are not mentally handicapped and therefore can be trained well to spend a normal independent life.

Keywords: Autism, Autistic Behaviors, Autism Spectrum Disorders, Speech Therapy, Occupational Therapy, Social Deficit Disorders

INTRODUCTION:

"Autism" or "autism spectrum disorder" is a neuro-developmental disorder and is characterized by persistent deficit in social communication and interaction, restricted interest and repeated pattern of behavior. These symptoms are usually recognized in early years of life (<3 years of age). Word spectrum refers to wide range of multiple symptoms, skills and levels of disability in these children making them mildly, moderately or severely autistic¹. Autism is not a single disorder with one known cause, in fact it is a group of multiple disorders with numerous causative factors² such as

(A) Genetic Factors:

Autism runs in the families, if one of the family members has this disorder, then there are increased chances that other blood relatives would be at a greater risk. If one twin is suffering from autism then the other has much greater chance of having it. In the same way if one child has it, the chances are increased upto 35% in the next children to have the same kind of disorder³. Some might also report that it was never in the family before. In such cases a sudden change in normal genetic pattern simply called as mutation may be responsible⁴. Identification of a specific gene related to this disorder has not succeeded as yet. Generally it has been noticed that boys are 4-5 times more prone to have this disorder than girls⁵.

(B) Environmental Factors:

Multiple environmental factors have been identified and studied such as maternal stress, maternal prenatal stress, gestational diabetes, infections during gestation, use of drugs specifically anti-epileptics and anti-depressants during pregnancy⁶. Along with that release of meconium in the amniotic fluid can also be one of the factors. A very important factor is birth asphyxia that is delayed

cry after birth leading to decrease oxygenated blood supply to brain tissues in early minutes after birth might also lead to such neuro-deficit disorder. Even smoking during pregnancy can lead to autism in the baby^{7, 8}. All these factors should be kept in mind for the next child if any child is affected in the family.

(C) Vaccines:

Many parents think that after vaccination the signs and symptoms of autism appeared in the child. The fact is more with mercuric element in the vaccines or combined vaccines such as MMR (measles, mumps and rubella). Many studies were recently conducted to sort out the problem but none have showed a positive relationship in this regard^{9,10}.

PATHOPHYSIOLOGY:

It has been suggested that in autism there is some deficiency in brain factors¹¹ some or all parts of the functional brain can be affected¹². The pathology starts at the time of gestation and it is influenced by the environmental factors¹³. Mostly that part of brain is affected which is related to cognitive functions¹⁴. The proposed reasons for the pathogenesis are excess of neurons,¹⁵ disturbed integration of neurons,¹⁶ imbalance in excitatory and inhibitory neurons,¹⁷ abnormal functioning of synapse and dendritic spine¹⁸.

SIGNS AND SYMPTOMS:

Big sized head at birth or after few months of birth with CT scan showing abnormal brain development can be a sign of autistic child. In later years they are focused on only certain objects with no eye contact with parents. The children have low social interaction and decreased or no verbal communication¹⁹.

Social Impairment and Lack of Verbal Communication: These children have lack of interest in the friends of the same age, in fact they would like to play only few games of their own choice. They would not see the whole cartoon movie but would like to prefer repetition of few favorite scenes in the cartoon movie. There is usually lack of proper eye contact with family members and parents. One of the major sign of autism is lack of speech even after the age of 3 years. In some cases there might be a history of babbling in early years but subsequently these children adopt complete silence^{20, 21}.

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The facial expressions are at times not matching with the motor actions and one is unable to judge the sign of grief and amusement. These gestures and movements can be vague and can be noticed upon comparing with children of the same age. They are possessive for their toys and dislike sharing with others. They find difficulty in pointing an object and also proper waving to say goodbye^{22, 23}.

Repeated Actions:

These children can be noticed by repeated motor actions such as repeatedly moving their legs to and fro, flapping of the hands. They also like to move the object forward and backward many times. They might play with the spoon and fork for hours without getting tired^{24, 25}.

Slow Learners:

They are slow learners; they do understand but take time to comprehend the commands. In mild cases they can lead a healthy life but for them it is slow to understand the proper meaning of words and correlate the verbal command with the prevailing situation. At times they also show immature behavior such as unnecessary crying and physical aggression to show their frustration on objects²⁶.

Lack in Communications:

Children start babbling normally by the age of 2 and by 3 years they can say a sentence of few words. But most of the autistic children cannot say even a word and there is complete silence on their part with normal hearing^{27, 28, 29}.

Extraordinary Abilities:

These children are gifted with some extraordinary abilities more than a normal child of similar age such as ability to decode language, musical skills, mathematics problem solving, artistic abilities, computer and software skills, memory skills, directional memorizing skills, solving puzzles etc. Other surprising activities can be noticed by the parents such as playing of their favorite cartoon DVD in the player and use of remote to rewind and fast forward their favorite scene. They can also search and reach for their favorite food in refrigerator and cabinets. They can at times unlock the door to go out of the house. Simply the reason is that they have a strong devotion and motivation for their favorite stuff and want to have it at any cost^{30, 31}.

Gastrointestinal Disorders and Eating Habits:

Many parents report that these children have multiple gastrointestinal problems, such as gastritis, colitis, constipation etc. More than 40% of these children have such symptoms. They are also involved in eating objects that are not food such as chalks, paint, crayons, paper, clay or dirt. This problem is known as PICA. They persistently keep fingers or other objects in their mouth such as toys^{32, 33}.

Cars:

Cars stand for childhood autism rating scale. It is a 15

item rating tool used to characterize the behavior of child diagnosing the severity of the disease. Other scales used are Gillian autistic rating scale, Modified checklist for autism in toddlers, Social responsiveness scale and Screening tool for autism in 2 years³⁴.

MANAGEMENT OF AN AUTISTIC CHILD:

After final diagnosis it is hard for the family to face the terrible situation. In that case it is the prime duty of parents not only to take care of their child but also share grief and care for each other. They should give time to relax and think for better future plans. One should not lose hope and faith in Allah. They also need to evaluate and upgrade their strength, skills and attitude to deal with the emotional situation.

It is then the duty of extended family members to show flexible behavior and empathy to the parents. They should show love and care for the child and parent to cope up with the situation. They can also provide help in multiple ways. Even not asking repeatedly about the problem and condition is very important. They can also learn easy therapies and help the child when required. They can search on net and provide the latest information to the parent.

Parents should look for best possible nearby hospital where the therapies can be done. The treatment should be started at earliest and should be continued if it seems to be not working in the beginning. Mothers are required to learn these therapies and try them at home as well. They also need to interact with the parents of similar children and share their experiences. That would also help to solve many of the issues and difficult situations. They are required to stick to a schedule for the autistic child as these children get agitated if their daily routine is disturbed. These children are required to reward and praise for good work. Room should be decorated with colorful pictures. The pillow should be soft and blankets are required to be little heavy for them. Practically these things have been fruitful to decrease the mood swing in these children. They should be given time for fun. Their favorite toys and other stuff should be in their range. Certain sensory stimuli such as sounds, toys and stuff which make them cry should be kept away. Home should be made a safety zone in order to avoid worse situation³⁵.

Speech Therapy:

It includes variety of methods for the education of these children. There are some who do not talk whereas few of them love to talk but they are unable to comprehend the information. In this program firstly the speech evaluation is done and according to the result therapy is advised with the aim to develop useful communication. In totally nonverbal response alternative therapies of are required to taught and learn³⁶.

Occupational Therapy:

It helps the child to come out of their shyness and

segregated attitude. It also provides them to gain confidence and independence to carry out the tasks such as feeding, toilet training, dressing, grooming and enhancement of social skills³⁷.

Physical Therapy:

There can be small sessions of exercise with or without equipment to enhance motor activity of these children.

Primary Education and Skills:

It is a prime need of every child to have primary education. Children with mild cases can be educated in normal primary school. It is the responsibility of the teachers to focus on the issues and put more effort to train such children. They can be taught well and their some extraordinary quality can be notified and encouraged by the teacher. School going and sitting with peers provide healthy environment and social interaction with the children of the same age^{38, 39}.

Medical / Pharmacological Interventions:

Some researchers and reported articles have put emphasis that certain brain enhancers such as Encephabol can be helpful in treating disorders such as autism. But on ground realities none of such agents have been found fruitful. At times Risperidone and Aripiprazole (antipsychotics) are given to decrease the anxiety and irritability. Certain drugs such as antidepressants like Fluoxetine and Sertraline can also be given to treat depression and repeated behavior in these children⁴⁰.

Adulthood:

Before the child finishes the school the parents should think for the better future of the child. They should look for the best program and facilities related to the child interest so he can adopt independent living⁴¹.

CONCLUSION:

Autism is a neuro-deficit disorder. These children are not mentally handicapped so can be trained well to spend normal independent life. It is the key responsibility of not only parents but other family members and teachers to help, educate and guide such children to become responsible and respectable members of the society.

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ORIGINAL ARTICLE

Survival and Causes of Failed Amalgam Restorations

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ABSTRACT:

Objective: To determine the reasons for failure of amalgam restorations and evaluate the association between the reasons for failure of restorations with gender, classes of cavities, and teeth involved.

Materials and Methods: This cross-sectional study was carried out in the Operative Department of Dental Section of Bahria University Medical and Dental College Karachi, from June 2013 to February 2014. Patients were selected randomly who had presented with complaint in amalgam restoration. Specially designed proformas were used to get the information such as the name of the patient, age, gender, teeth in need for replacement of restorations, age of the restorations and the reasons for failed restorations. The criteria for failed amalgam restorations were secondary caries, improper proximal contact, fractured restoration and gingival irritation due to overhang. Chi-square test was applied to get the significance of the result.

Results: A total of 141 patients with failed amalgam restorations were examined. The mean age was 40 (± 16.18). In all 95 molar and 46 premolar teeth were observed. Secondary caries was leading reason for failure of amalgam restorations (44.68%), followed by gingival irritation due to overhang (17.02%), and margin fracture (12.05%). The mean of longevity of amalgam restoration was 5 years. Chi-square test showed significant association between causes of failure and duration of restorations, different classes of cavities (p -value < 0.000) and insignificant relationship with gender (P -value < 0.67).

Conclusion: Secondary caries was the most common cause of failure of amalgam restoration in Class II cavities.

Key words: Amalgam, Secondary caries, Longevity of amalgam restoration, Fracture of restoration.

INTRODUCTION:

Dental hard tissue does not have the ability to repair, therefore structural loss requires replacement with restorative material such as Amalgam, Composite, and Glass ionomer cement.¹ The performance of dental restorations is influenced by several factors, including the restorative materials used, the clinician's level of experience, the type of tooth, the tooth's position in the dental arch, the restoration's design, the restoration's size, the number of restored surfaces and the patient's age.^{2,3} Amalgam has a 160-year proven track record and its use has been controversial for the past 3 decades,^{4,5} but it is still considered as dental restorative material of choice due to economical and easy manipulation.^{6,7} Its uses vary worldwide.⁸ It is less technique sensitive comparable to other restorative material, and can moderately tolerate presence of saliva.⁹

A restoration is considered a failure when it is incapable to perform as expected. Many survey have been performed to find out reasons of failure of amalgam restoration, the results vary by national contrast.¹⁰ Replacement of restoration is time consuming and challenging.¹¹ It has been estimated that about 60% of the operative work comprises of replacement of faulty restorations.¹² Clinical studies have shown that recurrent caries and tooth fracture are the most common causes of amalgam failure.^{13,14,15,16}

Van Dyke also observed the presence of either secondary caries or fracture under every amalgam restoration.¹⁷ Dickerson reported the presence of caries in 40% cases of clinically well shaped and functional amalgam restorations.¹⁸ Boston et al examined two margins of¹⁷ extracted tooth microscopically, and observed 41% of the cases having caries.¹⁹

The aim of the present study was to determine the reasons for failure of amalgam restorations and assess its longevity.

MATERIALS AND METHODS:

A total of one hundred and forty one patients of either gender with failed amalgam restorations were selected from the Department of Operative Dentistry of Bahria University Dental Hospital (BUDH) from May 2013 to Feb 2014. The duration of the restoration, which included the time since the restorations were placed, was noted down. This helped in calculating the time duration in which the restoration failed. The time durations were based on patients' history and gave the average time figures for the restorations. The inclusion criteria was patients 16 years and above, with complaint in amalgam restoration and who do not had any objection to participate in the study. Patients with limited mouth opening, had signs and symptoms of irreversible pulpitis or periapical infection under amalgam restoration were excluded. Proformas were designed to record information regarding age, gender, different classes of cavity, tooth involved, duration of placement and causes of failure. Each restoration was examined in dry field under dental unit light illumination by naked eyes using explorer and mouth mirror and cases suspected for secondary caries were confirmed by taking intra-oral radiograph. The data was collected and analyzed with SPSS software version 17. Mean and standard deviation for age was determined. Chi-square test was applied to establish the relationship between gender, class of cavity, duration of placement of amalgam restoration before failure, and

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tooth involved with reasons of failure of restoration.

RESULTS:

A total of 141 patients with failed amalgam restorations were included in this study, 51.8% were male and 48.2% were female. The mean age of patients was 40.89 (± 16.187) and mean age of amalgam restoration was found more than 5 years as shown in Table 1. There were 95 molar and 46 premolar teeth with failed amalgam restoration. The majority restorations were failed in Class II cavities (46.8%) followed by Class I (21.99%), MOD cavities (21.27%), and cuspal coverage (9.92%), as shown in Table 2.

Secondary caries was primary cause of failure of amalgam restorations accounting for 63 cases (44.68%). It was commonly observed in Class II restoration (41.27%) followed by Class I restorations (33.3%), and MOD restorations (22.2%). Gingival irritation due to overhang (24 cases) was second leading cause for failed amalgam restorations, and (79%) Class II restorations were affected.

12.05% restorations were failed because of margin fracture, it was also observed in Class II restorations (82.35%). while supplementary reasons for failed amalgam restoration include tooth fracture (13.47%), and food impaction (4.2%) figure 1 and Table 2. Amalgam restorations were more failed in molars due to secondary caries 40% and gingival irritation due to overhang 23.15%. Survival rate of restoration was more than 5 years in 56.73% cases.

All the data was based on patient's history. Cross tabulation between duration of restoration, classes of cavity and

cause of failure showed significant association (p-value <0.000) Table 2.

Table 1
Mean age and Duration of placement

<u>AGE</u>	
Mean	40.89
Minimum	16
Maximum	79
Standard deviation	16.187
<u>LONGEVITY</u>	
Mean	5.0
Standard deviation	1.590

Figure 1
Causes of Failure

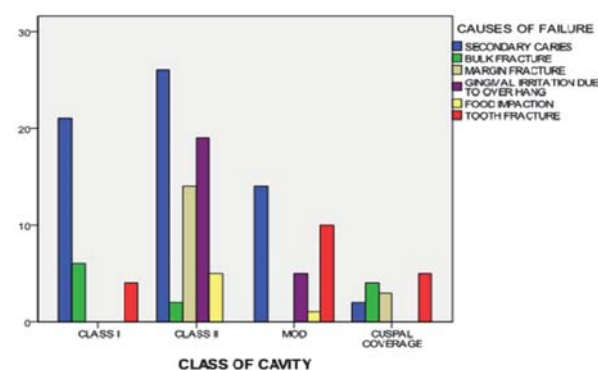


Table 2

Causes of failure of amalgam restoration in gender, class of cavity, duration of placement and tooth involved

	Secondary Caries	Bulk Fracture	Margin Fracture	Gingival irritation due to Overhang	Food Impaction	Tooth Fracture	Total	Chi-square test P-value
Gender								
Male	33	6	7	12	2	13	73	< 0.587
Female	30	6	10	12	4	6	68	
Total	63	12	17	24	6	19	141	
Class of cavity								
Class I	21	6	0	0	0	4	31	<0.000
Class II	26	2	14	19	5	0	66	
Mod cavities	14	0	0	5	1	10	30	
Cuspal coverage	2	4	3	0	0	5	14	
Total	63	12	17	24	6	19	141	
Duration								
six months or less	0	2	2	7	1	2	14	<0.007
1 year	0	0	1	0	1	0	2	
2 years	2	0	2	0	1	0	5	
3 years	8	0	1	1	1	1	12	
4 years	12	3	3	5	0	5	28	
5 years or more	41	7	8	11	2	11	80	
Total	63	12	17	24	6	19	141	
Tooth involve								
Molar	38	10	7	22	1	17	95	<0.000
Premolar	25	2	10	2	5	2	46	
Total	54	12	17	24	6	19	141	

DISCUSSION:

Amalgam is a restorative material especially suitable for class I and II restorations in teeth that encounter heavy masticatory forces. The advantages of amalgam restorations include resistance to wear, tolerance to a wide range of clinical placement conditions, and excellent load-bearing properties.

In the present study, secondary caries was the most dominant cause of failure of amalgam restoration (44.68%), followed by gingival irritation due to overhang (17.02%). A number of earlier studies also reported similar results that secondary caries was the most common reason for the failure of amalgam restorations^{20,21,22,23} Jokstad and Mjor, in their study observed that the main reason for replacement of class II amalgam restorations was secondary caries.²⁴ Kidd et al, demonstrated that every functional restoration had a chance to fail within few years²⁰ Substantial data has been confirming the secondary caries as prime rationale for failed amalgam restoration. Bernardo et al, in a controlled clinical trial reported that secondary caries accounted for 66.7% of failures in amalgam restoration and 87.6% failure in composite restorations.²⁵ Gingival surface is more frequently involved in secondary caries because the gingival aspect of any restorations is more difficult to keep plaque free than any other surfaces, especially if it is located inter-proximally. Secondly, during the placement of restoration, the contamination by gingival fluid and saliva impairs the visualization of gingival floor and improper placement of restorative materials, leading to secondary caries more frequently.²⁶

In few studies fracture was found more frequent than secondary caries.²⁷ Fracture of the tooth is more common in MOD restorations than any other cause of failure. Replacement or coverage of fracture-prone cusps may result in improved life expectancy of complex amalgam restorations. The incidence of cusp fractures was greater in endodontically-treated teeth with MOD amalgam²⁸. The approximate median survival of amalgam restoration in different studies ranged from 5 to 15 years^{22,23}. According to Norman and colleagues, larger restorations performed more poorly, regardless of material.²⁹ The median age calculated in this study was 6 years. Opdam et al, 21 reported survival rate for amalgam, was 89.6% at five years and 79.2% at 10 years. Both genders were equally affected in this study. Large studies have revealed that amalgam longevity is appreciably superior to composite resin longevity^{30,31}. It is essential that there should be well established, wide-ranging, consistent and universally acceptable guiding principle, precise enough to help the dentist in taking clinical decisions²⁸. In order to achieve more consistent results it would be advisable to evaluate greater number of teeth for longer period of time.

CONCLUSION:

The predominant causes of failed amalgam restorations were secondary caries, gingival irritation due to overhang and margin fracture. The longevity of restorations was more than 5 years. The incidence of secondary caries was higher in Class II followed by Class I cavities and greater in molar than premolar tooth.

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ORIGINAL ARTICLE

Tuberculous Empyema Thoracic -Surgical Perspective

Rizwan Aziz Memon¹, Syed Ali Arsalan², Ali Raza Uraizee³, Jawed Ahmed Memon⁴,
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ABSTRACT:

Objective: To find out the difference in outcome of patients undergoing surgery for tuberculous empyema in early V/S late stages of disease.

Subjects and Methods: This is a retrospective study of 163 patients of 20-50 years of age who underwent thoracotomy and decortication for tuberculous empyema thoracic from July 2009 to June 2013. Patients were divided into two groups on the basis of their duration of use of Anti-Tuberculosis Therapy (ATT). Group A (n=80) took ATT for 2 months and Group B (n=83) took ATT for 4 months and above. Age less than 20yrs and above 50yrs, poor functional and nutritional status, underlying parenchymal disease, A.T.T. Defaulters and MDR T.B were excluded.

Results: There was no mortality in Group A, while 1 mortality occurred in Group B. Mean day of discharge was 5th post-operative day in Group A and 6th in Group B. 7 patients from Group A and 13 patients from Group B had wound complications whereas 5 patients from Group A and 12 from Group B required up to 10 day of hospitalization due to prolonged air leaks. 1 patient from Group B required revision of procedure and ended up with pleurocutaneous window.

Conclusion: Operating patients early with T.B Empyema Thoracic carries better results if compared to those operated at a later stage. Patient selection is an important factor. Key to success is adequate intake of A.T.T. dose by the patients

Keywords: Tuberculosis, Empyema thoracic, Decortication, Thoracotomy.

INTRODUCTION:

Tuberculosis (TB) is a leading pulmonary disease; approximately 8 million new cases of tuberculosis are reported worldwide annually, resulting in 3 million deaths.

Tuberculosis is an infectious disease caused by Mycobacterium Tuberculosis; other species of mycobacteria can also produce similar changes of granulomatous response associated with intense tissue inflammation. Pleural tuberculosis is the most common form of extra-pulmonary tuberculosis, which originates from primary infection in 90% cases, while in 10% cases it is due to reactivation of cavitated or fibrocaceous lesion. TB Empyema thoracic is relatively rare about 3-5% of all tuberculosis cases in the developing world and is 10th most common cause of pleural effusion in US, while situation is quite different in developing world where tuberculosis is endemic and it is the most common cause of empyema thoracic. HIV co-infection and multi drug resistant TB (MDR-TB) are changing the epidemiology of TB empyema and the incidence is as high as 90%. Empyema thoracic is defined as pyogenic infection in the pleural cavity. This condition is usually a complication of para-pneumonic effusions, surgery, traumatic haemothorax and other conditions¹. In developing countries the majority of patients with empyema thoracis

are due to tuberculosis². The objectives of empyema thoracis treatment is to ensure that the pus is completely drained so that the entrapped lung expands in pleural cavity to fill the pleural space. This helps to eliminate the complications and chronicity of the disease. Thoracocentesis, tube thoracostomy, intrapleural thrombolytics (urokinase), thoracoscopic drainage, open drainage and decortication have all been used with success rates ranging from 10 to 90%³. The aim of this study was to find out the difference in outcomes of patients undergoing surgery for tuberculous empyema thoracic in early V/S late stages of disease.

SUBJECTS AND METHODS:

This retrospective observational study was carried out in the department of cardiothoracic surgery, Liaquat National Hospital and Medical College, Karachi. Records of the patients were reviewed and 163 patients both males and females, 20-50 years of age taking A.T.T in calculated dosage with monitoring. They underwent thoracotomy and decortication for Tuberculous Empyema Thoracis from July 2009 to June 2013. They were identified and included in the study. Patients were divided into two groups on the basis of their duration of use of Anti-Tuberculosis Therapy (ATT). In Group A, 80 patients were included who took ATT for 2 months and in Group B, 83 patients were included who took ATT for 4 months and above. Diagnosis of tuberculosis was made on the basis of pleural fluid analysis and CT scans showing findings consistent with tuberculosis. Patients less than 20 years and above 50yrs., patients with poor functional status and nutritional debilitation, patients with significant underlying parenchymal disease /bilateral as revealed by CT Scan chest, A.T.T. defaulters and absconders and patients with MDR T.B were excluded from the study.

RESULTS:

There were 98 males and 65 females. Age wise distribution is shown in figure 1. Patients with left sided pleural effusion were 85 and patients with right sided pleural effusion were 78. All the patients had presence of air fluid

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levels on chest x-rays and thickened pleura along with split pleural sign on CT scan. Laboratory analysis of all the pleural effusions showed monocytic exudate suggestive of tuberculosis. All patients were treated with posterolateral thoracotomy and decortication. Average operating time of Group A was 2 hours and 30 minutes and of Group B was 2 hours and 50 minutes. In Group A there was no mortality while in Group B there was 1 mortality due to ventilator associated pneumonia. In Group A all cases had complete resolution of the empyema along with improvement both clinically and radiologically with only 7 cases having postoperative wound complications and 5 patients required up to 10 days of hospitalization due to air leaks as shown in figure 2. Group B had higher post-operative complications. 12 patients required upto 10 days of hospitalization due to air leaks, 13 had wound complications and 1 patient required revision of procedure and ended with pluro cutaneous window.

Figure 1

Age-wise distribution of patients with TB empyema

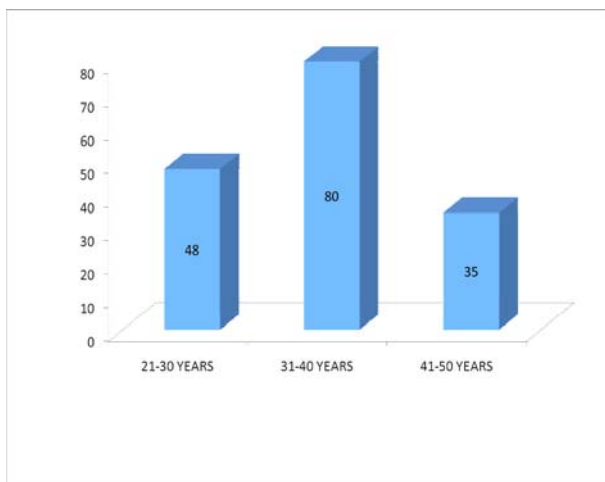
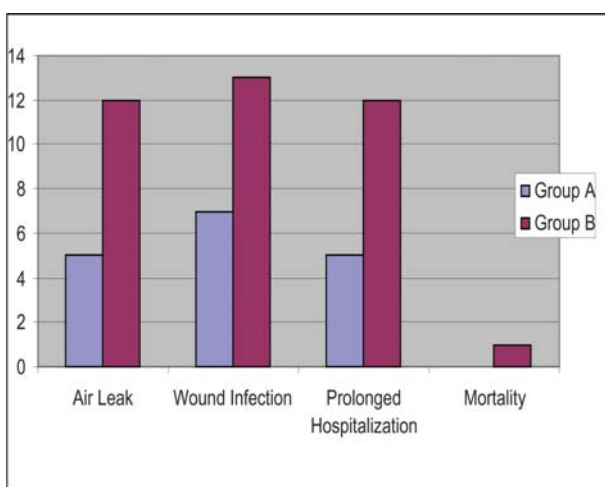


Figure 2

Outcomes of Both Groups



DISCUSSION:

Currently Tuberculosis is more considered as a medical rather than a surgical disease. Tuberculosis (TB) is very much linked to the history of thoracic surgery and it can be traced from history that Hippocrates himself performed the very first thoracic surgical procedure of open drainage of pleura for empyema thoracic resulting from TB³. Empyema thoracic is an important cause of morbidity and mortality in developing countries. It can be reflected from our study that males are more affected than females and this is consistent with other studies from the neighboring countries⁴. Majority of patients with tuberculous empyema thoracic presented at young ages i.e. < 40 years of age. In a study done by Acharya et al the median age of patients with tuberculous empyema was 21-40 years⁵. All the cases had formation of a fibrinous inelastic membrane on the surface of both the pleura. Pulmonary infections may lead to empyema formation of which tuberculosis is the most common cause. As the case with any other parapneumonic effusion, tuberculous effusion with pleural involvement - exudative stage can progress into fibrinopurulent empyema thoracic and organized fibro thorax⁶. This is referred as pleural cortex. This is the third stage of the empyema formation also referred as the organization stage. It causes the lung to encase, with less expansile ability. The only treatment of this stage is thoracotomy and decortication⁷. Thoracotomy and decortication is the method of choice when the lung is entrapped in the thick inflammatory coat and the patient is fit for surgery⁸. In the study of Choi, empyemectomy and decortication resulted in better post operative outcomes in patients with tuberculous empyema in-terms of improved pulmonary function⁹. Gokce has documented that open decortication significantly raises the FEV1 and FVC ratio by re-expanding the entrapped lung from the thick fibrous peel along with enlargement of the intercostal spaces further improving any chest wall deformities¹⁰. Various strategies are being developed for the treatment of tuberculous empyema thoracic. These are video assisted thoracoscopic surgery, medical thoracoscopy under local anesthesia and the use of Intrapleural Streptokinase in the management of empyema thoracic¹¹ however all these procedures do have their limitations as these procedures can be used only in cases of stage 1 or stage 2 empyema where there is no organization of the empyema into a fibrous peel. In a study done by Banga et al regarding use of Intra pleural streptokinase in chronic empyema thoracic they have suggested a trial of high dose Intra pleural streptokinase in chronic empyema patients. However this is still subject to research as being a developing country and lack of affordability of patients this methodology cannot be opted¹². An institutional report by Casali has showed that in cases where there is complete obliteration of pleural space and VATS cannot

be performed under such circumstances traditional thoracotomy and decortication is an effective approach with long term acceptable functional results¹³. In a study done by Shahin et al there was a conversion rate of 19% from VATS to open thoracotomy in patients with stage -3 empyema (Organization stage). Since all our patients presented with organization stage of empyema, VATS could not be considered the first option for surgery as suggested by this study¹⁴. Surgery should be offered without delay if the patients have persistence of infective symptoms and are not improving on medical therapy and inter costal drainage¹⁵ as our study showed that operating patients early carried better results as compared to those operated in later stages. Treatment of tuberculous empyema involves evacuation of the pus and re-expansion of the affected lung because residual pleural space has the potential of re-infection¹⁶. The overall complication rate in our study was 15%. The most common complications were wound infections being 5.8% which is consistent with the wound infection rate shown in the study done by Marks and other researchers^{17, 18, 19}. Even though surgical indications for tuberculosis and the timing of surgery are still controversial^{20, 21, 22} as we have shown in our previous study as well²³. Several authors do recommend that surgical intervention can be performed before 3 months if the medical treatment has been failed^{24, 25} and this is our recommendation as well from the current study.

CONCLUSION:

Even though tuberculosis has well established medical treatment, it has surgical indications also especially in empyema thoracic being mostly due to complications arising from the condition. The timing of surgery is very important as early surgical intervention with T.B Empyema thoracic carries better results if compared to those operated at a later stage. Patient selection are an important factor. Surgery remains the standard Treatment.

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ORIGINAL ARTICLE

Role of Amaltas and Dandasa in Controlling Biofilm Formation of *Streptococcus Sangius*

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ABSTRACT:

Objective: To analyze the anti-biofilm activity of naturally occurring substances dandasa (*Juglans regia*) and amaltas (*Cassia fistula*) against *Streptococcus sangius*.

Materials and Methods: This experimental study was carried out at Bahria University Medical and Dental College (BUMDC) Karachi from December 2013 to March 2014. A total of fifty *Streptococcus sangius* samples were taken from oral biofilm and identified using conventional, biochemical, cultural and molecular methods. Biofilm forming activity of these isolates was recorded and then exposed to dandasa and amaltas.

Results: Amaltas and Dandasa both in a concentration of 12.5mg/ml and 3.2mg/ml respectively showed good anti-biofilm forming activity against *Streptococcus sangius*. Combination of dandasa with amaltas did not show more effective inhibitory effect against biofilm formation suggesting an indifferent activity with anti-adhesive index of 0.75 against *Streptococcus sangius*.

Conclusion: *Streptococcus sangius* in oral biofilm exhibited biofilm formation which is the cause for antibiotic resistance and provides shelter to other organisms. Amaltas and dandasa provide a good antibiofilm activity individually against *Streptococcus sangius*.

Keywords: *Streptococcus sangius*, Amaltas, Dandasa, Biofilm.

INTRODUCTION:

During the last decade increasing efforts have been done to replace or supplement mechanical and therapeutic measures with antiseptics or antibiotics. It has been observed that people are not usually bothered to maintain proper hygiene especially oral hygiene. They usually relate this reluctance to busy working schedule. Poor oral hygiene allows the oral bacteria a chance to form oral biofilm. This film in turn provides shelter to pathogenic microorganisms present within them. These biofilm forming organisms usually exhibit resistance to commonly used antibiotics. Exclusive and unnecessary use of antibiotics also play a role in creating resistant strains. Present study used naturally occurring products amaltas and dandasa for the control of biofilm formed by *Streptococcus sangius*.

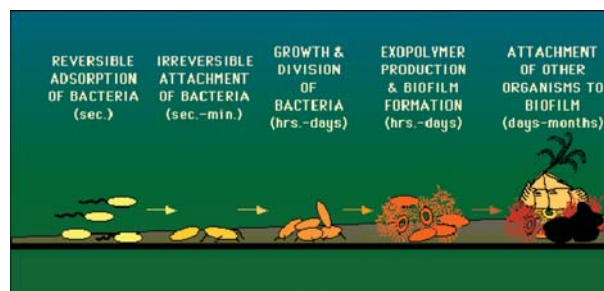
Biofilms:

Biofilms are microbial communities that are formed irreversibly on different surfaces including teeth^{1,2} and can be difficult to control since they can form where cleaning is not performed properly. Biofilms can exist as a mass of microorganisms with vertical and horizontal channels allowing liquid flow and dispersion of nutrients and waste components³. These biofilms provide pathogenic bacteria as a source of product contamination^{4,5}. Oral biofilm (Dental plaque) is a soft

deposit that accumulates on the teeth. In addition to the bacterial cells, plaque contains a small number of epithelial cells, leukocytes and macrophages. (Figure 1.)

***Streptococcus sangius*:** It is a Gram-positive pathogen, found in the human oral cavity and is a significant contributor to tooth decay. It is one of a few organisms equipped with receptors that improve adhesion to the surface of teeth. Sucrose is used by *S. sangius* to produce a sticky, extracellular, dextran-based polysaccharide that allows them to cohere to each other and form biofilm.⁶

Figure 1
Process of Biofilm Formation



Family Name: CAESALPINACEAE Botanical Name: CASSIA FISTULA The Indian Laburnum, known also as Amaltas, is one of the most beautiful flowering trees. During the flowering season, the profusion of flowers hanging from its branches cover the tree so entirely that the tree, appearing bright yellow, can be spotted with ease even from a distance. Amaltas is classified as a tree of medium height. Leaf shedding proceeds the flowering season. When the tree is leafless, it is possible to see the long rod-like pods of the previous year. Young shoots and buds appear just after leaf shedding. The flowers are long hanging clusters and called shower of cascading flowers.⁷ The compound leaves of amaltas are dark green, except when young. The tender leaves are bright green or sometimes a beautiful rich copper color. What starts off as a thread like pod soon acquires the typical straight

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long rod-like appearance (Figure 2a). On ripening the pods turn dark brown or black. This plant has antibacterial and antifungal activity^{8,9,10,11,12}.

Figure 2a
Cassia Fistula (Amaltas)



Walnut is a common temperate forest tree found throughout the world. The plant belongs to the family Juglandaceae. The dried bark of Juglansregia (Dandasa) is locally available in Pakistan (Figure 2b). This bark is used to improve oral hygiene traditionally. There are very few reports stating about side effects after their oral use but none has reported any severe toxicity outcome¹⁴. It has also been used for eczema, pruritus, blisters and as blood cleanser and laxative. The tree is rich in flavanoides including catechins, myricetin, naphthohydroquinone and Vitamin C.¹³ Different other bioactivities have also been previously reported including antiaging, antiproliferative, antimutagenic, anti-inflammatory and antinociceptive activities etc.¹⁴

Figure 2b
Juglans Regia (Dandasa)



MATERIALS AND METHODS:

Microscopic Examination: In this study 50 cases from dental clinics were selected and samples were obtained to culture for streptococcus sanguis. Isolates were confirmed by grams staining, microscopy and biochemical tests.

All clinical isolates were identified at BUMDC and PNS-Shifa microbiology laboratory Karachi by standard

biochemical methods. Study was conducted from December 2013 to February 2014

Collection and Preparation of Natural Compounds:

(a) Plant Collection:

Dried amaltas available in the market and Juglansragia (dandasa) which is the dried bark of Persian walnut tree were purchased from local market.

(b) Preparation of Aqueous Extracts:

A solution of each dried plant material was prepared in sterile distilled water by taking 5gm/100ml and heating at 95°C in water bath for two minutes and cooling for two minutes. Procedure was repeated thrice and final extractions were centrifuged. Supernatant were filtered through 0.2µm membrane, stored at -20°C and thawed before use. 50mg/ml of these products were used as initial concentration then further dilution was made accordingly.

Biofilm Forming Assay through Elisa Reader:

We perform two methods using 96 well plates for determining the biofilm forming ability of all cariogenic bacterial isolates. In order to study the biofilm formation, culture was grown in Tryptone Soya Broth, matched with 0.5 McFarland. Culture was transferred in each well of microtitre plate. Along with the test, controls were also run having strep. mutans, pseudomonas aerogenosa, uninoculated broth and empty wells. Plates were made in duplicate, incubated and covered at 37°C for 24h and 72h. Cell turbidity was monitored using a microtitre plate reader at an optical density (O.D) at 405 nm. After incubation medium was removed from wells and microtitre plate wells were washed with PBS to remove loosely associated cells, each well was stained with 100 µl of 1% crystal violet solution for 45min and further washed 3 times with PBS over which 10% alcohol was added and O.D was recorded by measuring the absorbance through ELISA reader and similarly another plate which was incubated for 72hrs was read for O.D determination.

Bacterial Adhesion Assay:

A 20ul of pre culture suspension matched with McFarland 0.5 was inoculated in glass tube containing 1 ml of Brain Heart Infusion broth plus 1 ml of tested compound of required concentration and then this tube was left at an angle of 30 undisturbed for 18 hr at 37°C for culture and adhesion. After that suspension transfer into new culture tube (fraction A). Add 1 ml Brain Heart Infusion broth and 1ml compound tested in empty tube from which we put in fraction A then did vortexing for 30sec. It was then shifted to another culture tube (fraction B). Finally 1 ml of Brain Heart Infusion broth and 1ml of tested compound added in the tube from which we put suspension in fraction B then sonication was done so that bacteria which is tightly adhered detached and we named this tube as (fraction C) Turbidity was checked in each fraction at OD 550 nm adjusted tube having 1ml

Brain Heart Infusion broth and 1ml compound only as OD 550 nm as 0. Percentage adhesion was calculated by putting values in following formula $(C/A+B+C) * 100$, WHERE A,B ,C considered as turbidity of fractions at OD 550nm¹⁵.

RESULTS:

Out of 50 streptococcus sangius sample we had 35 samples which showed biofilm forming activity (figure 3a). It took 72 hrs for streptococcus sangius to form a proper biofilm(figure 3b). There was a drastic decrease in biofilm forming property of streptococcus sangius (figure 3c). Anti-adhesive activity of dandasa (3.2mg) was more effective in case of streptococcus sangius as compared to amaltas (Table 1) whereas both compound showed indifferent activity when used in combination (Table 2).

Figure 3a
Streptococcus Sangius Sample

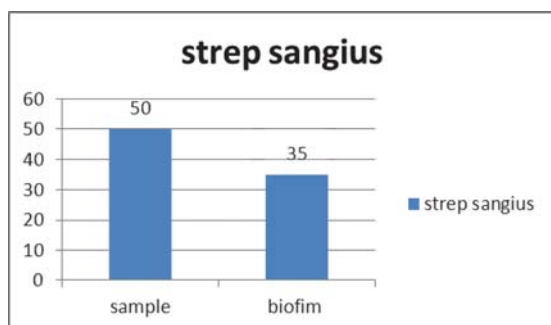
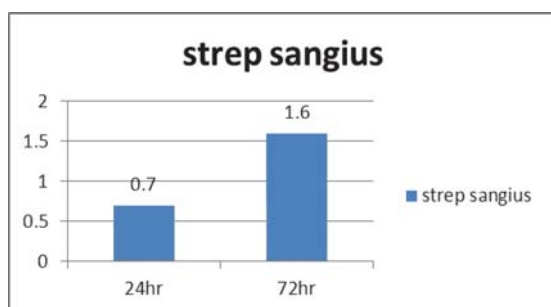


Figure 3b
Biofilm formation



Cut off value > 1.0 biofilm former

Figure 3c
Biofilm in the presence of Amaltas and Dandasa

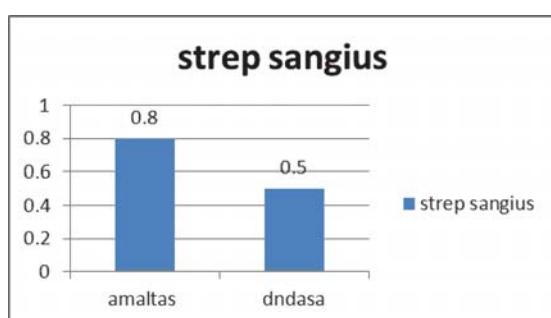


Table 1

Anti adhesive activity against Streptococcus Sangius

Streptococcus Sangius				
Amaltas	A	B	C	% of adhesion
12.5mg/ml	2.5 ± 0.244	1.3 ± 0.294	.6 ± 0.163	14%(effective)
6.2mg/ml	2	1	1	25%
Dandasa				
A	B	C	% of adhesion	
3.2mg/ml	2 ± 0.163	1.6 ± 0.141	.5 ± 0.141	12.1%(effective)
1.6mg/ml	2.5 ± 0.294	1.5 ± 0.355	1 ± 0.141	20%

Table 2

Combine effect of Amaltas and Dandasa

	Dandasa (individually) (effective)	Combination	Amaltas (individually) (effective)	Combination	Antiadhesive index	Relation
Strep. sangius	3.2mg/ml	1.6 mg/ml	12.5 mg/ml	3.2 mg/ml	0.756	Indifferent

DISCUSSION:

People are getting undue exposure of pathogenic bacteria due to unhygienic conditions which may be avoided by using some preventive measures. Also as a result of ignorance and bad oral hygiene, bacteria form oral biofilm which provide protection to these bacteria. As a consequence there is a high incidence of infections and their complications. For the eradication of these infections people are using antibiotics but these antibiotics does not reach inside the biofilm and therefore bacteria remain viable inside the biofilms. Because of this reason antibiotics become resistant against these biofilm bacteria. Frequent use of different antibiotics to eradicate infection produce many side effects as well.^{16,17} We used some natural products which are easily available as well as cheap in comparison to antibiotics. We also tried to find out anti-biofilm concentration of these natural products which came out to be much less in concentration in comparison to the concentration required for antimicrobial activity.

In our study 70% prevalence of streptococcus sangius was found in dental plaque samples. Isolated organisms from dental plaque formed firm invitro biofilm after 72 hr whereas when Dandasa and Amaltas were used no biofilm was formed even after 72 hrs. These results are favoured by other documented studies^{18,19,20}. It is also observed in our study that anti-adhesive activity of

dandasa is more effective in case of streptococcus sangius. However when we combined both these natural products then none of the compound (amaltas and dandasa) showed synergistic or antagonistic activity and both compound showed indifferent activity^{21,22,23}. This makes it evident that amaltas and dandasa are more effective when used separately. These findings are coinciding with the results of other studies^{24,25}

CONCLUSION:

Our study concludes that it takes 72 hrs for an organism to develop biofilm. This is the actual or right time when antibacterial or anti-biofilm agent should be applied to prevent the formation of biofilm. Amaltas and Dandasa control the formation of biofilms and prevent infectious diseases. They are natural products with minimal side effects. Moreover they are cost effective and easily accessible to everyone.

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ORIGINAL ARTICLE

Audit of Perinatal Mortality at Jinnah Postgraduate Medical Centre Karachi

Razia Korejo¹, Shazia Naseeb², Haleema Yasmin³, Shakeel Ahmed⁴

ABSTRACT:

Objective: To determine the perinatal mortality rate (PNMR) and its causes.

Materials and Methods: An audit of all births was conducted from January 2010 - December 2010 in the department of Obstetrics and Gynecology Unit 1 of JPMC, Karachi. All still births from 28 weeks of pregnancy and neonatal deaths within first seven days of life in the hospital either in the obstetric ward or in the neonatal nursery were recorded. Aberdeen (Obstetric) classification of perinatal deaths was applied in the audit for classification of perinatal causes.

Results: From 1st January to 31st December 2010, there were 7537 deliveries and 453 perinatal deaths. Four hundred and seven babies were still born while 46 died within 7 days of birth. The perinatal mortality rate was 60.1/1000 total births and still birth rate was 54.0/1000 total births. The leading cause of perinatal deaths was antepartum hemorrhage 140(30.9%). This included abruption of placenta 97 (21.4%) and placenta previa 43 (9.4%). The next common cause was mechanical accounted for 95 (21.0%). Hypertensive disorder of mother was responsible for 94 (20.8%) of perinatal deaths. Congenital malformation caused deaths in 39 (8.6%) cases. Low birth weight was identified in 37(8.1%) maternal medical disorder as jaundice, anaemia and diabetes were responsible for 17 (3.7%) and neonatal infection such as respiratory disorders and septicemia caused deaths in 3 (0.6%) of cases.

Conclusion: Perinatal Mortality Rate in 2010 at JPMC was 60.1/1000 total births with leading cause of antepartum hemorrhage.

Keywords: Perinatal mortality, Stillbirth, Neonatal death, Audit, Tertiary care hospital

INTRODUCTION:

Perinatal mortality is a sensitive indicator of the quality of service provided to pregnant woman and their newborn. Perinatal mortality audit is an institutional help to find out the status of quality of services and to determine the important causes of perinatal deaths. It also enables to take measures for reducing and combating it. World Health Organization's (WHO) I.C.D-10 criteria for perinatal mortality include all still births from 22 weeks of gestation (or birth weight of >500gms) to neonatal deaths within seven days after birth.¹ Before October, 1992, all fetal deaths were registered as still births if they were delivered after 28 weeks of gestation; afterwards, gestational age for still births in United Kingdom was lowered to 24 gestational weeks as a result of change in legislation.² For the rural population of developing countries like Pakistan, perinatal deaths are defined as fetal deaths after 28 weeks gestation or more than 1000gms and early neonatal deaths with in the first week of life.

According to WHO, the number of perinatal deaths worldwide is greater than 7.6 million, with 98% of these

deaths occurring in developing countries³. While developed countries have seen dramatic decline in perinatal mortality because of investments in reproductive health and socio-economic conditions, corresponding progress in under-resourced countries has been slow. Because many births take place in domiciliary settings and are poorly reported, especially stillbirths,⁴ reliable reports on perinatal mortality are lacking. In many parts of Africa and Asia PNMR is as high as 75/1000 and 36-74/1000 total births respectively.⁵ While some estimates of perinatal mortality from community settings are available⁶, there are no country-specific estimates of perinatal mortality for Pakistan. A demographic survey of eight Squatters settlements in Karachi indicated a perinatal mortality rate of 54/1000 births.⁷ Similarly a large prospective study of village and peri-urban slum based population around Lahore revealed a perinatal mortality rate of 67/1000 total birth with still birth rate of 44%⁸.

Most of the methodologically sound available information on perinatal mortality in Pakistan is generated from hospital based studies⁹⁻¹⁰. A multicentre survey of hospital based studies by the Society of Obstetrician and Gynaecologist of Pakistan (SOGP) showed that overall PNMR in 1993 was 92/1000 total births with the majority of deaths (72%) were stillbirths¹¹.

Three previous studies of perinatal mortality rate at JPMC from 1965-67¹² 1989¹⁰ and 2000-2001¹³ have showed a perinatal mortality rate of 92, 101.8 and 60.1/1000 total births, respectively. Jinnah Postgraduate Medical Centre being the most busy and the premier referral hospital of the city, has 135 beds in the Obstetrics and Gynaecology Department with the annual admissions exceeding 12000 and approximately 7500 to 8000 deliveries taking place every year. Booked cases are only 30% and majority are referred cases, with some patients traveling over distances of 100 to 500km from province of Baluchistan and

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periphery of Sindh.

This retrospective study was undertaken to determine the perinatal mortality rate (PNMR) and its causes in the year 2010 at JPMC Karachi.

SUBJECTS AND METHODS:

This audit was conducted at JPMC from 1st January to 31st December, 2010. A standardized proforma and case definitions for data collection was developed. The criteria for booked status were a minimum of three antenatal visits in index pregnancy. The maternal data included age, parity, period of gestation, complications in pregnancy and mode of delivery. Infant data collected included weight, reported gestation age, sex, Apgar score at birth, age and the cause of death. Aberdeen (Obstetric) classification of perinatal deaths was applied in the survey for classification of perinatal causes, as it is more pertinent in the cause categorization, which is clinical and based on obstetrics risk factors. The causal explanation for three large groups of Wiggles worth and NICE classification namely intrauterine death, asphyxia and immaturity are difficult to be ascertained due to limitation in the diagnostic facilities of stillbirths and postmortem being declined in all cases due to religious and ethical reasons. Thus making Aberdeen classification, which is conceptually similarly to NICE classification, 14 as the most appropriate for resource-poor countries in perinatal studies.

RESULTS:

During one year period 1st January to 31st December 2010, there were 7537 deliveries and 453 perinatal deaths. Four hundred and Seven (407) were still born and 46 died within 7 days of birth. (Table1) summaries the pertinent information pertaining to these births. 118 (26.0%) deaths occurred in booked patients and 335 (74.0%) in non booked patients. The mean maternal age was 31.4 years. 111 (24.5%) perinatal deaths occurred in primigravidae and 186 (41.5%) in grand multipara. The majority of perinatal deaths were in preterm infants 338 (74.6%), and 115 (25.4%) were of 37 weeks gestation or more. The frequency of abnormal delivery was caesarean sections had to be performed on foetuses already dead, because of obstructed and prolong labour, placenta previa, and ruptured uterus. The overall perinatal mortality rate was 60.1/1000 total births and still birth rate was 54.0/1000 total birth. Causes of perinatal deaths according to Aberdeen classification are shown in (Table 2).

The leading cause of perinatal death was antepartum hemorrhage 140(30.9%). This included abruption placentae 97 (21.4%) and placenta previa 43 (9.4%). The next common cause was mechanical accounted for 95 (21.0%). Hypertensive disorder of mother was responsible for 94 (20.81%) of perinatal deaths. Congenital malformation caused deaths in 39 (8.6%). Low birth weight was identified in 37(8.1%) maternal medical disorder as jaundice, anaemia and diabetes were responsible for 17 (3.7%) and neonatal infection, respiratory disorders and septicemia caused deaths in 3 (0.6%) cases.

Table 1
N=7537

Booking Status	SB	NNDs	Total	%
Booked	109	9	118	26.0
Nonbooked	298	37	335	74.0
Maternal age				
15 – 20 years	38	8	46	10.25
21 – 30 years	185	18	203	44.81
31 – 40 years	153	12	165	36.42
> 40 years	31	8	39	8.6
Parity				
0 + 0	98	13	111	24.5
1 – 4	144	12	156	34.4
5 & above	165	21	186	41.1
Gestational Age				
28 – 32 weeks	206	8	214	47.21
33 – 36 weeks	103	21	124	27.47
> 37 weeks	98	17	115	25.48
Total	407	46	453	100.00

Table: 2
The Aberdeen Classification of Perinatal Deaths

Causes of death	SB 407	NNDs 46	Total 453	%
Congenital anomalies	38	1	39	8.6
Hydrocephalus	13		13	2.86
Anencephaly	15	-	15	3.31
Meningomyelocele with Spina bifida	3	1	4	0.88
Spina bifida with cleft palate	3	-	3	0.66
Omphalocele	2	-	2	0.44
Multiple (Talipes, Cleft palate etc.)	2	-	2	0.44
Hypertensive diseases	87	7	94	20.8
PIH	41	4	45	9.93
Eclampsia	46	3	49	10.8
APH	132	8	140	30.9
Abruptio placentae	94	3	97	21.4
Placenta previa	38	5	43	9.49
Mechanical	85	10	95	21.0
Obstructed and prolonged labour	28	5	33	7.28
Cord prolapsed	5	-	5	1.10
Ruptured uterus	20	-	20	4.41
Transverse lie	15	-	15	3.31
Breech	10	3	13	2.86
Brow Presentation	5	-	5	1.10
Forceps	2	2	4	0.88
Maternal infections and diseases	12	5	17	3.75
Heart disease	-	-	-	-
Jaundice	4	1	5	1.10
Anaemia	1	-	1	0.22
Diabetes	7	4	11	2.42
Isoimmunization	-	-	-	-
Neonatal infections	-	3	3	0.66
RDS	-	2	2	0.44
Septicemia	-	1	1	0.22
Unexplained	53	12	65	14.4
Birth weight <2.5kg	30	7	37	8.16
Birth weight >2.5kg	23	5	28	6.18
Total	407	46	453	100.00

DISCUSSION:

In this audit diversity in population as ethnicity, socio-economic status and education level of mothers were the confounding variables. Because of limited access and affordability to Neonatal Intensive Care Unit (N.I.C.U), the viability limit for perinatal period is still considered as 28 weeks of gestation, in Pakistan. Loss of follow-up due to early discharge of apparently healthy neonate prior to completion of first postnatal week was also a rate-limiting factor, as these neonates could have died at home and not reported to us.

In our audit, perinatal mortality rate is similar to that of other under developed countries¹⁵. These figures are not strictly comparable with population-based data from England and Wales or Denmark and Sweden¹⁶ but are

indicative of large public sector hospitals in developing countries.

Low socio-economic status, poverty, malnutrition and lack of antenatal care and a large burden of referred cases accounts for increased perinatal mortality rate.¹⁴ The high perinatal mortality rate shown in our set up is a reflection of inadequacy and inaccessibility of maternity services of our country and the poor socio-economic status and cultural pattern of the population.

With regard to parity of the mothers it has been observed that perinatal mortality has been higher among the first born and after the 5th child, as grandmultiparity is an established obstetrical and medical risk factor for both mother and foetus.¹⁷ This was also noted in a previous study.¹⁴ Period of gestation is an important factor for

survival of infants as figured out in a study. where largest number of deaths were noted in infants born before 37 weeks of gestation¹⁸ similar to another study.¹⁵ In our study abruption placentae was the commonest cause of still births and more than 50% of these babies weighed 2.5Kg and above. It is an important cause of perinatal mortality and morbidity in the developing countries and even in USA where 15% of deaths occurred due to abruption placentae^{19,20,21}. In the low socio-economic group of patients maternal malnutrition resulting under perfusion of the placental site is said to increase the risk of abruption.^{22,23}

In the present study mechanical causes like difficult labour, obstructed labour, ruptured uterus and cord accidents were identified. These deaths are indicative of the lack or in adequacy of antenatal and intra-natal care. In this study congenital malformation were seen in 39 (8.6%) of deaths. Though all congenital malformations were obviously not incompatible with life but these malformations were not diagnosed as no autopsy was allowed and carried out. Congenital malformation has become important cause of death in the developed world as other causes are eliminated and it is now responsible for more than 20% of deaths in contrast to our study^{24,25} What can and should be done? Improving primary and secondary health care facilities, availability of trained birth attendants and or lady health visitors to conduct safe deliveries at home can surely be helpful in changing the present day scenario. The problem of emergencies can also be reduced if the private maternity homes have had adequate arrangements for emergency resuscitative measures, such as I/V infusion, blood transfusion and skilled obstetrician. This would lower the frequent necessity of rushing the patient to the hospital at the last minutes which further tends to increase the perinatal mortality. In order to reduce perinatal mortality what requires an overall improvement in the socio-economic status of our population with better nourishment, education change in cultural pattern, health awareness and availability of good maternal and neonatal services.

CONCLUSION:

Perinatal Mortality Rate in 2010 at JPMC was 60.1/1000 total births. The leading cause was antepartum hemorrhage with abruption of placenta being first followed by placenta previa.

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Contextual Learning in Adult Education

"Educators of adults have long recognized that relating instructional content to the specific contexts of learners' lives and interests increases motivation to learn" (Dirkx and Prenger 1997, p. 2). By integrating academic content with situations or issues that are meaningful to students, instructors can help adults acquire skills more rapidly than through approaches that focus only on subjects (ibid.). This type of learning, frequently called contextual learning, incorporates recent research in cognitive science and recognizes that learning is a complex process that involves much more than behaviorist approaches emphasizing drill and practice ("What Is Contextual Learning" 2000). The idea of embedding instruction in contexts that are familiar to adult learners has been embraced by adult educators. Recent research (e.g., Dirkx, Amey, and Haston 1999; Sandlin 2000), however, has suggested that adult educators may need to take a more critical approach to using contextual learning. This *Brief* examines the use of contextual learning in adult education. Following an overview of contextual learning, it reviews some recent research and writing on contextual learning in adult education and concludes with some recommendations for practice.

Contextual Learning: What Is It?

Contextual learning is rooted in a constructivist approach to teaching and learning (Brown 1998; Dirkx, Amey, and Haston 1999). According to constructivist learning theory, individuals learn by constructing meaning through interacting with and interpreting their environments (Brown 1998). The meaning of what individuals learn is coupled with their life experiences and contexts; it is constructed by the learners, not by the teachers; and learning is anchored in the context of real-life situations and problems (ibid.; Dirkx, Amey, and Haston 1999). Constructivism challenges the technical-rational approach to education by redefining the relationship between the knower and what is known, including what is most worth knowing and who decides (Dirkx, Amey, and Haston 1999).

Current perspectives on what it means for learning to be contextualized include the following (Borko and Putnam 1998; Putnam and Borko 2000):

- **Situated cognition.** Both the physical and social contexts in which an activity takes place are an integral part of the learning that occurs within these contexts. A relationship exists between the knowledge in the mind of an individual and the situations in which it is used. "Theories of situated cognition, which focus explicitly on this relationship, assume that knowledge is inseparable from the contexts and activities within which it develops" (Borko and Putnam 1998, p. 38).
- **Social cognition.** Learning is more than just the individual construction of knowledge. Interactions with others in learners' social environments are major factors influencing what is learned and how the learning takes place. Over time, individuals participate in a number of different social communities (known as *discourse communities*) that provide the cognitive tools (e.g., ideas, theories, and concepts) for them to make sense of their experiences.
- **Distributed cognition.** Related to both the situated and social nature of cognition is the idea that it is also distributed. Individuals often engage in collaborative learning activities and draw on resources beyond themselves in their learning. Researchers,

therefore, have suggested that cognition is also an activity "that is distributed or 'stretched' over the individual, other persons, and symbolic and physical environments" (ibid., p. 41).

Drawing on its roots in constructivist learning theory as well as theories of cognition and learning, contextual learning has the following characteristics (Clifford and Wilson 2000):

- Emphasizes problem solving
- Recognizes that teaching and learning need to occur in multiple contexts
- Assists students in learning how to monitor their learning so that they can become self-regulated learners
- Anchors teaching in the diverse life context of students
- Encourages students to learn from each other
- Employs authentic assessment

**Adult Education Perspectives
on Contextual Learning**

Because constructivist learning theory maintains that learning is a process of constructing meaning from experience, it is congruent with much of adult learning including self-direction, transformative learning, and situated cognition (Merriam and Caffarella 1999). It also connects directly to beliefs about the central role of experience in adult learning in which experience is viewed "as both a resource and a stimulus for learning" (ibid., p. 263). Contextualizing learning by providing instruction directly related to the life experiences or functional contexts of adult learners (Sandlin 2000) grows out of this constructivist approach to learning.

Although contextual approaches can be found throughout adult learning settings, they have been particularly popular in adult literacy, welfare-to-work, workplace education, and family literacy programs. In these settings, learner contexts are used to integrate academic content with the life experiences of learners (Dirkx, Amey, and Haston 1999). Two recent studies (Dirkx, Amey, and Haston 1999; Sandlin 2000) suggest that adult educators need to take a more critical approach to this use of contextual learning.

Sandlin (2000) studied consumer education materials used in adult literacy classrooms and Dirkx, Amey, and Haston (1999) interviewed "underprepared adults" enrolled in developmental education at a large, Midwestern community college. Both studies found that the practice of contextual learning tended to reflect technical-rational interpretations of knowledge and that the contexts selected reflected teachers', policymakers', or curriculum developers' ideas of how the knowledge would be used and applied within that context. In Sandlin's study, for example, most of the topics covered were technical skills, a focus that "reveals that the texts view literacy as a skill or task and thus take a particular political stance toward the creation of knowledge and the position of the learner—mainly that knowledge creation lies outside of the learner and that learners must passively react to rather than change social situations" (p. 294).

Dirkx, Amey, and Haston's (1999) interviews led them to similar conclusions about how contextualized learning was employed. Students reported that teachers used contexts to illustrate how academic concepts could be applied but "the emphasis...remains not on learners constructing their own meaning but on developing accurate representations of the meaning intended through the text" (p. 100).

Sandlin's (2000) examination of the consumer education texts used in adult literacy classes revealed two additional problems with contextual learning. First, the texts displayed a deficit perspective toward the students. The lessons assumed the students had little or no experience with the skills being taught and that, without proper guidance, they would continue ineffective consumer behavior. Second, the lessons in the texts ignored the realities of the larger social, political, and economic systems that formed the contexts of the lives of the learners and perpetuated myths such as "consuming is natural and good" (p. 300), everyone has fair and equal access to financial services, and financial institutions are benevolent.

The studies cited suggest that, when using contextual learning, adult educators need to examine how it is being implemented and whose aims are being served. Although the students involved in the studies represent only one segment of adult learners, similar situations may arise across the spectrum of adult education programs when using contextual learning.

Contextual Learning in Practice

When using contextual learning in adult education, consider the following recommendations for practice:

- **Select an approach that reflects the complex contexts of learners' lives.** A number of approaches to contextual learning exist and not all of them accurately reflect the complex nature of learners' lives. The skill-based approach, for example, may emphasize learning a skill such as math and use examples from real-life contexts. A limitation of this approach, however, is the fact that it may reduce life skills and academic competencies to a very narrow context and ignore the "holistic and multilayered nature of the experiences being represented by the life skill" (Dirkx and Prenger 1997, p. 10).
- **Examine materials for bias.** Any materials used to support learning should be examined to ensure that they are not reinforcing existing stereotypes and myths or perpetuating the status quo. Contextual learning should be a tool for helping adults reflect on and make changes in their lives. Materials—such as those examined by Sandlin (2000)—that are not reflective of learners' lives and do not help them examine assumptions and become critical thinkers should not be used.
- **Avoid imposing the perspectives of others.** Contextual learning should reflect the context of learners and allow them to construct their own knowledge. Rather than making assumptions about the contexts of learner lives, instructors should engage in discussions with learners to more fully understand their worlds. Questions such as "what do they need to know and why?" and "how will this information be used?" should guide these discussions.
- **Use the group as a resource.** Draw on the social and distributive aspects of contextual learning by using the group as a resource. In any group learning setting, knowledge is distributed among the learners, and they can serve as resources for one another by clarifying ideas and concepts, suggesting additional resources, and so forth. The instructor can be a partner in this effort as well.

Contextual learning is an approach that incorporates many of the beliefs about how adults learn. Like any other approach to learning, however, it should be examined critically for its appropriateness and effectiveness in the particular learning situation.

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COMMENTARY

Mandate of Establishing an Ethical Review Committee

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ABSTRACT:

The National Bioethics Committee (NBC) was approved by the Government of Pakistan in 2004. Its basic mandate is to "promote and facilitate ethical health services delivery and health related research. The secretariat of NBC is the Pakistan Medical Research Council (PMRC) under Ministry of Health Government of Pakistan. A Code of Ethics has been issued by Pakistan Medical and Dental Council (PMDC) and according to this code all research protocols must be reviewed by an Ethical Review Committee (ERC) at their local institute.

A 15- member committee which comprises of faculty from basic sciences, representatives from social science departments, clinicians, a person with knowledge of ethics of medical research and a lay person is an ideal team. This is essential to cater to the well being of patients and safety of research. In this way the importance of ethics will be realized by all health providers. The ERC should inculcate the sense of ethics in health providers and must be realized as an important component of any institution.

Key words: ERC, guidelines, CIOMS, terms of reference, human tissue.

INTRODUCTION:

Declaration of Helsinki and council for international organization of medical sciences (CIOMS) guidelines should be consulted and referred to in formulating and designing the code of ethics outline^{1,2}. World Medical Association had issued the original Declaration of Helsinki in 1964 and an amended version in 1975³. Recently, CIOMS presented its revised international ethical guidelines for biomedical research in a symposium at the 12th World Congress of the international association of bioethics, Mexico City 2014. This council is a non government organization established jointly by WHO and UNESCO in 1949^{4,5}. The guidelines given in this relate mainly to ethical justification and scientific validity of research. It deals with ethical review, informed consent, vulnerability (of individuals, groups, communities, populations and women), equity regarding burdens and benefits, choice of control in clinical trial, confidentiality, and compensation for injury due to the research protocol.

They also deal with strengthening of national or local capacity for ethical review and look after the obligations of sponsors to provide health- care services. Their scope reflects the changes, the advances and the controversies that have characterized biomedical research ethics in the last two decades. CIOMS guidelines are designed to be of use to countries in defining national policies on the ethics of biomedical research involving human subjects,

applying ethical standards in local circumstances and establishing or improving ethical review mechanism. A meticulous aim of these guidelines is to reflect upon the needs and conditions of low-resource countries, and to look after the implications for multinational or transnational research in which different countries may be working together in the same project^{6,7}. If the Australian's National Health and Medical Research Council's (NHMRC) basic requirements is consulted we can appreciate that its main theme is to include all medical and scientific researches done whether on humans or animals which must be approved by a properly constituted ethic committee. The specific requirements of using humans including left over tissue must be laid down by this committee^{3, 4}.

Use of discarded human tissue in research has extensively been used by researchers but it is mandatory to maintain a controllable and transparent system. This should be in addition to consent by the local ethics commissions.⁵ In order to maintain this system, a German law, the charitable state-controlled foundation Human Tissue Cell Research (HTCR) was founded in 2000 at the University of Regensburg, Germany⁶.

To take responsibility of the ethical and legal aspects of using human tissue for research was the main goal of this foundation. In order to fulfill this, the foundation has established an ethics and scientific council which is responsible to approve such studies that involve human tissue. The foundation HTCR was established in Germany but the ethical and legal aspects of donating and using discarded human tissue for research is quite similar in other countries. The way the HTCR foundation handles the procedure, it may be helpful in finding solutions to the existing law.⁵ Very importantly it may serve as a platform to practice standard procedures for using human materials in accordance to ones legal system, religion and culture. It must be remembered by investigators involved in research which is conducted on human subjects that their primary duty is to respect individual patients. It must be kept in mind that subjects must participate willingly. The participants must have sufficient

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knowledge about the research and proper informed consent must be sought.

The need of establishing an Ethical Review Committee (ERC) at any institute in Pakistan should be based upon the research activity of faculty members and students and must be established in health care centers in line with HEC/PMDC guidelines and policy. Majority of the researchers do research on humans including their left over tissue in order to fulfill the requirements of the degree and attain appropriate experience but they are unaware of the ethics involved in usage of subjects or their tissues without appropriate consent. There is also a need of developing ethical values among the medical students so that they should know the value of human life and its application in their professional career^{6,7,8}. The objectives of establishing this committee at any institute should not only be to look at research proposals but to go beyond that and try to fulfill other aspects as the name indicates it is a committee that reviews ethics. The duties of such a committee must be wider, some of which must include⁹,

- To enhance ethical values in research
- To approve only those research proposals which are ethical and safeguard the rights and well being of research participants including humans and left over tissues that will be used for research purposes.
- To educate the faculty and staff in ethical research
- To foster and encourage research
- To develop ethical values among medical and other health related students in their under graduate teaching.

A 15- member committee is its requirement, the members must include:

- a. Faculty from basic and clinical sciences
- b. Representatives from social science department
- c. A person with knowledge of ethics of medical research
- d. A lay person
- e. A religious scholar

These members should be nominated on the basis of interest in biomedical ethics. The members must first be trained via attending workshop on the functioning of an ERC which must be conducted by experts of biomedical ethics. An outline of duties and responsibilities of ERC members should be explained.

The terms of reference should be formulated by also taking into considerations the recommendations by the report of Royal College of Physicians of London (1996) which is entitled "Guidelines on the Practice of Ethics Committee in Medical Research involving Human Subject"^{10, 11}.

These terms of reference have been derived for application

to both biomedical and social science research^{12, 13, 14}. The ERC should not only limit its role by looking after the research proposals but must take a step forward to encourage all faculty members to especially present the ethical concerns in the meeting or other forums as provided by local institutions. In this way the faculty will look at the researches which they conduct from an ethical point of view as well and will learn to use these virtues in their researches. Ethical Issues should also be touched upon during class room learning especially during small group discussions for example in Problem Based Learning sessions, in which the students have to identify issues and then look for answers which are later discussed in group form^{13, 15}.

The ERC establishment is beneficial for the researcher as well as the subjects. In order to cater to the well being of individuals it is important to create awareness about their rights. It has been realized that in the past and present several unethical studies have and are being conducted therefore efforts can be made to make one realize of the unethical practices by such maneuvers. Such unethical practices have been noted in several studies all over the world. Even today we face such practices and in order to minimize or abolish this, the role of ERC is very essential and significant. The most important role that such a committee can and must play should be to inculcate ethical thinking in the faculty and students rather than just imposing rules and regulations^{16, 17}.

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STUDENTS CORNER

Preclinical Ward Teaching: Student's Perspective

Tehreem Fatima¹, Zunaira Batool²

ABSTRACT:

History taking and basic clinical examination plays a pivotal role in the training of medical undergraduates. Medical history is the information gained by a physician by asking specific questions, from the patient with the aim of obtaining information useful in formulating a diagnosis and providing medical care to the patient. The relevant complaints reported by the patient are referred to as symptoms, in contrast to clinical signs, which are seen by direct examination of the patient by the doctor. The information thus gathered, enables the doctor to make a diagnosis and plan treatment for the patient. There is a need to encourage active participation of learners by engaging all students rather than engaging a single one while others observe. Thus history taking and examination skill is central to the transformation of a medical undergraduate student into a competent health professional and must be given due emphasis in medical schools.

Keywords: Medical history, clinical examination, student prospectus.

At undergraduate level, medical schools strive to give students an increasing contact with patients earlier in their course. The first step in this training is history taking and basic clinical examination¹. In clinical medicine, the patient's past and present which may contain relevant information bearing on their past, present and future health, is defined as history². Mastery of history taking and examination skills is central to the transformation of a medical undergraduate student into a competent health professional. These skills serve as the fundamental tools for a doctor and help him fit into future clinical practice.³ Without good history taking and examination skills, it is nearly impossible to be an ideal doctor. Therefore, it can be said that good history taking is a cornerstone in the training of future doctors.⁴ It is very well said 'listen to your patient, he's telling you the diagnosis'. Many times history alone reveals the diagnosis, and it might be the only thing required to proceed further. For example, the complaint of headache.⁵ The site, severity, frequency, characteristic and other description about the pain may lead to the diagnosis of a particular type of headache. Similarly, one can also make a significant diagnosis through examination, which in this case would be that of all the related systems/organs. Therefore it can be easily said that the purpose of further investigations is simply to confirm a specific diagnosis, made on the basis of the history. Moreover, it is not just the diagnosis, but history is also a sharing of experience between the patient and doctor, and we as a doctor, allow the patient to unburden himself.⁶ By winning his confidence and understanding the social context of patient illness, a doctor can transform patient's worries into a useful diagnostic and therapeutic tool.⁷ He should also enquire about other factors that might have an impact on or may be related to the patient's future health.

In this way he can educate the patient while carrying out the counseling. A good example is that of smoking. A patient who comes to a doctor for any complaint, and reveals that he is a smoker, can be convinced by his doctor about the life-threatening hazards of smoking. This is referred to as 'opportunistic health promotion'. The doctor-patient relationship also has a therapeutic effect on the psychological state of the patient that is how the patient views his illness⁸.

History taking as per specified by PMDC starts in the 3rd year of the MBBS training. The importance of history taking at the level of 3rd year MBBS lies in the fact that it involves and polishes multiple skills of the student at one time. He becomes a good listener of his patient's complaints. His communications skills are refined as he interacts with more and more patients. His body language is improved.⁹ A characteristic of humility is inculcated into him. All these factors contribute to the emergence of a better personality of the student and helps in nurturing and grooming professionalism in the young doctors¹⁰. Not only for a student, history and examination are also very important for a classified specialist. Any tiny aspect of a history if missed, may lead to serious complications. For example, a patient presents with a complaint that requires surgery under general anesthesia. If the doctor misses out his past medical history and on the operation table it turns out that the patient is asthmatic, it can lead to very serious complications owing to the use of the endotracheal tube.¹¹ It is quite evident that the art of history taking which starts in undergraduate years refines and matures as the medical profession moves on provided the pillars are placed correctly and with due firmness. Speaking about the acquisition of this art translation of history to practical use at Bahria University Medical and Dental College (BUMDC), the students of 3rd year MBBS are divided into groups of 12. Each group is then sent daily to a particular ward/OPD for three weeks. The time allotted for clinical practice both history taking and clinical skill is 2 hours. This is ample time provided if used properly. In our view the methodology of clinical teaching at present for 3rd year MBBS students at BUMDC is, more focused on factual recall rather than on

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development of problem solving skills and attitude. While students are taught these basic techniques in group teaching sessions, its implementation must ensure that these are practiced on patients on individual basis, thereby avoiding mere passive observation by the students and thus encouraging active participation of all adult learners. Students usually take history and examine a patient in large groups. This should be discouraged as a routine because only one student asks the questions/carries out the examination, while the rest of the lot get distracted, hence the fact, that many of them remain weak in this basic skill till the end of the year. The entire process also requires due supervision by a team so that written records of the histories/examinations must be, discussed, submitted and timely marked. Students should maintain their clinical teaching portfolios. This will provide opportunity to students to improve their performance on regular basis and gain good grades in the ward test at the end of each clinical posting and hence in the annual professional examination too.

Sessions in OPDs and operation theaters, while providing some exposure to the workings of the clinical side, should be made more effective in teaching and the knowledge being imparted must be delivered in easy palatable form for the 3rd year students. The students should not be shown cases of advance diseases for which they have no basic knowledge as many a times they are not taught about them before hand. The OPDs and operation theaters do provide a clinical environment to the students. It will be very interesting if students could be exposed to live surgeries through camera techniques or video may be made of these procedures and then discussed with the students. In teaching hospitals as the teachers have to deal simultaneously with their normal clinical workload while teaching a group of students in the allocated amount of time, quality of teaching is liable to be compromised even if the teacher wants to impart knowledge with sincerity. Therefore during the allocated teaching time ward working must be handed over to other clinical colleagues. Thus handicaps in student's clinical teaching can be overcome and improved by reviewing the teaching methodology and involving the students' and teachers' feedback responses. In our perspective, following measures to re-emphasize may ensure a more effective and goal oriented clinical teaching.

There is a need to encourage active participation of learners by engaging all students rather than engaging a single one while others observe. This can be done by two ways. First, by allocating roles to each student, i.e. asking different students to take different components of the history like presenting complain, history of presenting complains etc.¹² Similarly, students can be allocated one system each for physical examination like cardiovascular or respiratory system, etc. Also, other students can be

asked to observe and then later summarize the history and major findings of the examination, thus increasing the overall productivity of the session in the same amount of time. The other way is to ask each student to take a separate history and present it individually so that everyone knows where they lack.

To enhance the problem solving aptitude of the students, they must be encouraged to use the collected information simultaneously to generate a diagnostic hypothesis along with a treatment regimen.¹³ This will hone their problem solving skills and also prepare them for their role as future clinicians. Proper supervision of students during clinical rotations is necessary. Ward faculty must at all times facilitate the students and regulate the application of the taught skills. There should also be strict monitoring of the attendance system, in order to ensure that the allocated time is being used properly and in accordance with the objectives of the curriculum.

A patient oriented log book must be kept by each student, recording all the histories and examinations they have carried out. A specified number of cases per month must be recorded, and each must be read and signed by the observing facilitator, who should then provide feedback on it. At the end of each clinical posting, in the ward test each 3rd year student must be evaluated on the basis of their skills, and the results should have some weightage in the continuous academic assessments, so that the students may take the assigned task seriously. A teacher assigned to focus solely on the students in the clinical allocated time must be exempted from other simultaneous workings of the wards/OPDs.

As a student of 3rd year MBBS, we think that these simple measures can further raise the outcome of future doctor and increase the esteem of our prestigious institute. Thus medical history or medical case history also called historically anamnesis and abbreviated as Rx of a patient is the information gained by a physician by asking specific questions, from the patient with the aim of obtaining information useful in formulating a diagnosis and providing medical care to the patient.¹⁴ The relevant complaints reported by the patient are referred to as symptoms, in contrast to clinical signs, which are seen by direct examination of the patient by the doctor. The information thus gathered, enables the doctor to make a diagnosis and plantreatment for the patient. If a diagnosis cannot be made, then only further investigations should be done to clarify the diagnosis or to make a definitive diagnosis¹⁵.

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CASE REPORT

Periorbital Necrotizing Fasciitis

Kaleem Ullah¹, Tahira Zamir²

ABSTRACT:

Necrotizing Fasciitis is a rare, rapidly progressing and severe infection of subcutaneous tissue and underlying fascia. Thrombosis of perforating vessels of the skin and subcutaneous tissue is the characteristic pathological feature. The disease can be monomicrobial or polymicrobial in origin. However, Poly microbial source of infection is more common. Typical sites of infection include extremities, abdomen and perineum. High index of suspicion is essential to prompt early diagnosis and ensure a favorable outcome. Management necessitates immediate surgical and antimicrobial treatment. This case report describes the rare presentation of periorbital necrotizing fasciitis. However, it highlights the key features of the disease for example rapid progression and extension, severe pain, systemic toxicity and subcutaneous tissue necrosis. HIV infection was the risk factor whereas Streptococcus pyogenes and Staphylococcus aureus were the causative organisms. Prompt diagnosis, early surgical intervention and administration of intravenous broad spectrum antibiotics resulted in encouraging recovery.

Keywords: Necrotizing Fasciitis, Periorbital, Streptococcus pyogenes, Staphylococcus aureus.

INTRODUCTION:

Necrotizing Fasciitis (NF) is a rare, rapidly progressing and severe infection of subcutaneous soft tissue and underlying fascia. Vasculitis and microthrombi formation with eventual intravascular coagulation and spreading necrosis are characteristic pathological features of the infection and present clinically with quickly spreading erythema, severe pain, systemic toxicity and blistering of the skin. Muscle involvement may occur and typically precedes necrosis of superficial fascia, subcutaneous fat and neurovascular structures.¹ The rapid and destructive clinical course of NF is assumed to be caused by polymicrobial symbiosis and synergy. Monomicrobial infection is usually associated with immune-compromised patients (cancer, diabetes mellitus, vascular insufficiencies, organ transplantation, or alcohol abusers)². Many aerobic and anaerobic pathogens may be involved, including Bacteroides, Clostridium, Peptostreptococcus, Enterobacteriaceae, Proteus, Pseudomonas, and Klebsiella, but group A hemolytic streptococcus and Staphylococcus aureus, alone or in synergism, are the initiating infecting bacteria³.

Facial Necrotizing Fasciitis, particularly involving periorbital and orbital structures, is considered rare. Ocular involvement characterized by eye pain, periorbital swelling and reduced vision is a recognized complication of facial and periorbital necrotizing fasciitis. Clinical vigilance and immediate surgical and antibiotic management is essential to limit recognized sequel of blindness, meningitis and death⁴.

CASE REPORT:

A 55-years-old married man resident of Dadu presented to the emergency department of AL- Ibrahim Eye Hospital, Malir, Karachi with the complain of swelling and pain in periorbital area for five days. Patient was unable to open his both eyes. According to the patient, he was alright 5 days back, when suddenly he noticed swelling in his periorbital area of both eyes. Later on, swelling was accompanied by pain. The swelling and pain were rapid in progress. Pain was extremely severe and excruciating in character. Patient was a diagnosed case of HIV for the last 6 months. There was no remarkable past surgical history. Patient was non diabetic and normotensive.

On general physical examination, patient looked ill but was well oriented with time, place and person. His temperature was 39.6°C. Pulse, respiratory rate and blood pressure were all normal. Rest of the general physical examination was unremarkable.

Local examination of involved area revealed edema, erythema, and necrosis involving eye lids, periorbital area, nasal bridge and forehead. His visual acuity was 6/6 in both eyes. On slit lamp examination, eye lashes were matted with marked edema of lids. There was copious pussy discharge from affected areas. Necrosis was more marked on lower eye lid. Rest of eye examination was not possible to perform. His blood was sent for investigation. Urgent blood report showed marked neutrophilia (WBCs 4×10⁹/L) and raised C-reactive protein however ESR was normal. Provisional diagnosis of periorbital necrotizing fasciitis was made and patient was hospitalized with 2- hourly TPR (Temperature, Pulse and respiratory rate) charting. Intravenous antibiotics Vancomycin plus Ceftazidime 500 mg B.D and Metronidazole 400 mg TDS were started. On the same day, patient underwent immediate local excision and debridement of the involved tissue. Excised necrotic tissue and fluid aspirate were sent for immediate culture and microscopic examination. Pathological examination of the excised tissue showed necrotizing fascia with acute inflammatory infiltrate and culture from the surgical

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wound were positive for streptococcus pyogenes and staphylococcus aureus. Blood culture was positive for staphylococcus aureus. Patient's condition was gradually improved and was discharged one week later with oral antibiotics. He was also counseled to have treatment for AIDS.

Figure 1a Necrosis of eye lids



Figure 1b Necrosis of periorbital area



Figure 2a After debridement



Figure 2b Patient at discharge



DISCUSSION:

Necrotizing Fasciitis (NF), the incidence of which has been reported to be 0.40 cases per 100,000 adults, is the most complicated and life threatening necrotizing soft tissue infection (NSTI). It has a progressive and rapidly advancing clinical course. Although occurring in all age groups, NF is slightly more common in older age groups (> 50 years of age) and there is a male to female ratio of 3:1 in most cases. The common sites of infection are the extremities (especially the lower extremities), abdomen and perineum⁵. The site of occurrence of necrotizing fasciitis in our reported case that is periorbital area is rare. However, the clinical presentation was typical. The patient presented with the characteristic symptoms that showed rapid progression and extension, intense pain, marked systemic toxicity and subcutaneous tissue necrosis. The age and gender of our reported case is in accordance to age and gender reported in literature.

Microbial invasion of skin and subcutaneous tissue occurs either through external trauma and surgical wounds or directly through bacterial invasion from a perforated organ. Microorganisms appearing in the skin and subcutaneous tissue spaces produce various toxins that cause prolonged vasoconstriction in the dermal capillary network. However, the thrombosis of perforating vessels of the skin and subcutaneous tissue is the characteristic pathological feature.⁶

The recent clinical classification distinguished four NF types: Type I (70-80%, polymicrobial/synergistic), type II (20% of cases; usually monomicrobial), type III (gram-negative monomicrobial, including marine-related organisms) and type IV (fungal)⁷. In a retrospective study that reviewed 198 patients, 182 patients had polymicrobial source of infection.⁸ Similarly, Anderson in his study found that more than 71% of cases had a polymicrobial source of infection.⁹ The microbiological report of our presented case showed infection with streptococcus

pyogenes and staphylococcus aureus (Group A hemolytic bacteria) which are the most common initiating bacteria causing necrotizing fasciitis as described earlier. Intravenous broad spectrum combination of antibiotics was used initially because of the more common polymicrobial source of infection³.

The most common risk factor for the development of necrotizing fasciitis is diabetes mellitus, with an occurrence of 56% in all cases. Other risk factors include obesity, alcohol abuse, immunodeficiency, chronic renal failure, liver cirrhosis, hypertension, peripheral vascular disease, and age above 60 years¹⁰. The presence of HIV was found to be the risk factor in our patient. The immune-compromised state of patient along with polymicrobial origin of infection is in agreement to reports in literature.

Although NF is rare, its mortality rate is high, ranging from 6% to 76%, although it is found to be much lower in recent studies (approximately 26%). It must be managed aggressively and requires extensive surgical debridement in combination with high-dose IV antimicrobials. Delay in treatment of more than 6 to 12 hours or inadequate primary surgical debridement contribute to significant morbidity and mortality.⁵ Numerous studies have found that the most important variable for the mortality rate is the timing and extent of the first debridement. In the study done by Mock the relative risk of death was 7.5 times greater in cases with improper primary debridement.¹¹ and in the study of Wong it was 9 times greater when primary surgery was delayed more than 24 hours¹².

CONCLUSION:

In conclusion, prompt diagnosis, early surgical intervention and administration of intravenous broad spectrum antibiotics are the keys to improve the survival in periorbital necrotizing fasciitis.

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LETTER TO EDITOR:

Millennium Development Goal -4 For Reducing Child Mortality- Are We On The Right Track?

Shakeel Ahmed

To,
Editor

The basic health progress of any country is measured in terms of indicators such as rates of child and maternal morbidity and mortality, immunization and nutritional status. Although there has been an increase in health awareness and easy access to health care facilities, childhood morbidity and mortality are still a global concern. According to UNICEF report of 2012 approximately 6.6 million children die each year before their fifth birthday¹.

The majority (83%) of these deaths occur in lower middle income countries from sub-Saharan and south-east Asian region including Pakistan. Early childhood infections like diarrhea, pneumonia, measles and malaria are the common causes². Majority of these deaths can easily be prevented by improving the health care infrastructure and health awareness in the community³.

Millennium Development Goal- 4(MDG-4) commits the global community to reduce child mortality rates in children below 5 year of age to two thirds of the 1990 baseline by the year 2015. Given the fact that Pakistan is one of the signatories of millennium declaration to improve the health and economic status of the people of the country, the Government of Pakistan must be committed to maximize the country's progress towards the Millennium Development Goals (MDGs) and improve the lives of Pakistani children. If we look even in 2014, a year away from when world leaders will meet again and assess whether we have achieved the MDG, we are far behind the target.

Under MDG 4, progress is measured against six indicators: under-five child mortality rate (U5MR); infant mortality rate; proportion of children 12-23 months fully immunized; proportion of children under-one year of age immunized against measles; proportion of children under-five years of age suffering from diarrhea in previous 30 days; and Lady Health Worker coverage. Among these the first and most important indicator to measure progress is the U5MR. Based on the evidence, Pakistan has shown slow progress on this indicator over the years but is far behind the target. According to recent report released by

Planning Commission, Government of Pakistan, under-five mortality fell from 117 deaths in 1990/91 to 89 deaths per 1,000 live births in 2012/13; and the infant mortality rate in this period fell from 102 to 74 deaths per 1,000 live births. However, both are still short of the MDG targets of 52 and 40 deaths per 1,000 live births for under-five and infant mortality respectively. Similarly the coverage for fully immunized children increased only from 75 to 80 percent and of measles immunization from 80 to 81 percent in this period; both are still short of the target of above 90 percent coverage⁴.

The National Health Policy is consistent with MDG targets, addressing childhood diseases and provision of quality care to reduce maternal mortality. Noteworthy programs focused on strengthening maternal and child health services within the existing health system include: the "Expanded Program on Immunization" (EPI), the Pakistan National Maternal Neonatal and Child Health Program (MNCH); the Population Welfare Program; People's Primary Health Care Initiative (PPHI). TB Control (DOTS), Malaria and HIV/AIDS control programs⁵. Despite these programs, Pakistan is still behind the target and hence unlikely to attain MDG 4 by the end of 2015.

There is a dire need for the government, health care providers, policy makers and Planning Commission to play an instrumental role in developing a new vision for a National Health Policy with a shift of focus from curative to preventive healthcare.

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Type the manuscript on ISO A4 (212 × 297 mm), with margins of at least 25 mm (1 inch). Type or print on only one side of the paper. Use double spacing throughout the manuscript. Start each section on new page. Number pages consecutively, beginning with the title page. Put the page number in the lower right-hand corner of each page.

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1. Abstract

It should have no more than 150 words for unstructured abstracts or 250 words for structured abstracts. The abstract should state the purpose of the study (objective), basic procedures (materials & methods with study design, subjects/animals, place & duration of study, drug/chemical/equipment, procedure or protocol), main findings (results) and conclusion. It should emphasize new and important aspects of the study. Below the abstract

provide, 3-10 key words that will assist indexers in cross-indexing the article and may be published with the abstract.

2. Introduction

State the purpose of the article and summarize the rationale for the study. Give only strictly pertinent references and do not include data or conclusions from the work being reported.

3. Materials & Methods

Describe your selection of the observational or experimental subjects (patients or laboratory animals, including controls) clearly. Identify the age, sex, and other important characteristics of the subjects. Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration. For randomized clinical trials provide information on all major study elements, including the protocol (study population, interventions or exposures, outcomes, and the rationale for statistical analysis), assignment of interventions (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding). Authors submitting review manuscripts should include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract. All studies must be approved by the relevant Ethics Committee/Institution Review Board of the respective institutions.

4. Results

Present your results in logical sequence in the text, tables, and illustrations. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Describe appropriate indicators of measurement error or uncertainty such as confidence intervals, P values. Report complications of treatment & dropouts from a clinical trial. Specify any general-use computer programs employed for analysis.

5. Discussion & Conclusion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. Include in the Discussion section the implications of the findings and their limitations, including implications for future research. Relate the observations to other relevant studies. Link the conclusions with the goals of the study.

6. Acknowledgments

List all contributors who do not meet the criteria for authorship, such as a person who provided purely technical

help, writing assistance, or a department chair who provided only general support. Financial and material support should also be acknowledged.

7. Authorship

Authorship credit is based only on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Conditions 1, 2, and 3 must all be met. Authors should provide a description of what each contributed.

8. Conflict of interest

All authors have to disclose and submit any financial /personnel relationship that might bias and inappropriately influence their work.

9. References

The Vancouver style should be followed. Examples are:

a) Standard journal article

List the first six authors followed by et al.
I) Less than 6 authors:

Vega KJ, Pina I, Krevsky B. Heart transplantation is associated with an increased risk for pancreatobiliary disease. *Ann Intern Med* 1996 Jun 1;124 (11):980-3.

II) More than six authors:

Parkin DM, Clayton D, Black RJ, Masuyer E, Friedl HP, Ivanov E, et al. Childhood leukaemia in Europe after Chernobyl: 5 year follow-up. *Br J Cancer* 1996;73:1006-12.

b) Organization as author

The Cardiac Society of Australia and New Zealand. Clinical exercise stress testing. Safety and performance guidelines. *Med J Aust* 1996; 164: 282-4.

c) No author given

Cancer in South Africa [editorial]. *S Afr Med J* 1994;84:15.

d) Chapter in a book

Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. *Hypertension: pathophysiology, diagnosis, and management*. 2nd ed. New York: Raven Press; 1995. p. 465-78.

e) Newspaper

Hasan Mansoor. Excessive use of drugs creating resistance to antibiotics. *The Dawn* 2013, 24 June; sect. Metropolitan (col.1-4)

10. Tables

Type or print out each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Give each column a short or

abbreviated heading. Place explanatory matter in footnotes. Explain in footnotes all nonstandard abbreviations that are used in each table. Identify statistical measures of variations, such as standard deviation and standard error of the mean. Do not use internal horizontal and vertical rules.

11. Illustrations (Figures)

Figures should be professionally drawn and photographed. Photographic prints 127 × 173 mm (5 × 7 inches). Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background. If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph. Figures should be numbered consecutively according to the order in which they have been first cited in the text. If a figure has been published, acknowledge the original source and submit written permission from the copyright holder to reproduce the material.

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Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals corresponding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend. Explain the internal scale and identify the method of staining in photomicrographs.

Units of Measurement

Measurements of length, height, weight, and volume should be reported in metric units. Temperatures in degrees Celsius, Blood pressure in millimeters of mercury & all hematologic and clinical chemistry measurements in the metric system in terms of the International System of Units (SI).

Abbreviations and Symbols

Use only standard abbreviations. Avoid abbreviations in the title and abstract. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

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1	Editorial	-	-	1000-1500	10-12	-	-
2	Review Article	Unstructured (150)	3-6	3000-3500	40-60	4	2
3	Original Article	Structured (250)	3-10	2500-3000	25-35	4	3
4	Medical Education	1. Original Structured (250)	3-10	2500-3000	25-35	4	3
		2. Review Unstructured (150)	3-6	3000-3500	40-60	4	2
		3. Reproducible work (guide lines, questionnaire)	Mention Source, Permission Accessed on, Retrieval date				
5	Short communication OR Commentary	Unstructured (150)	3-6	1200-1500	15-20	2	1
6	Student Corner	1. Original article, Structured (250)	3-10	2500-3000	25-35	4	3
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7	Case Report	Unstructured (150)	3-5	1200-1300	10-12	1	2
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