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Editorial

Ebola – the next Pandemic

Mohsin Masud Jan
Editor

The great 'natural' disasters in recorded history were 'pandemics', diseases that are particularly lethal, that start at one place and then spread around the world. One of the great pandemics in 'recorded' history was that of the Bubonic Plague (Black Death) that started from Central Asia and travelled westwards eventually reaching Europe in the middle of the fourteenth century.

After the destruction done by the plague, the Muslim heartland never recovered. The double whammy of the Mongol invasion followed by the plague changed the entire political and cultural landscape of the Muslim world. Perhaps, the Mongol devastation of Baghdad followed by the devastation from the plague was responsible for pushing Muslims of these areas back into religious obscurantism, almost a universal response to such natural calamities.

But then Europe was equally devastated by the plague. Even in Europe, religious extremism was the first response to the devastation wrought by the plague.

The major pandemic in the twentieth century occurred in 1918-1920. It was the 'Spanish Influenza'. Anywhere between twenty to a hundred million people died during this pandemic all over the world but many in Europe and in America.

The next 'major' politically and socially important pandemic was that of the Human Immunodeficiency Virus-Acquired Immunodeficiency Syndrome (HIV-AIDS) that hit the west, especially the United States in the early nineteen eighties. This started from Africa and spread to the west, but is also raising its ugly head in our part of the world. As of 2012, more than 30 million people are infected with this disease worldwide.

Unfortunately, when it comes to countries not as rich as the US, HIV-Aids remains a major problem. Once HIV-AIDS becomes established in Pakistan the consequences can be quite horrific, sort of following the course of Hepatitis C in this country.

In these days of frequent international travel there are diseases that can spread through 'contact' between people.

Ebola - a haemorrhagic fever that kills most of the people it infects -- is not highly contagious, but can spread easily in crowds where people are exposed to each other's bodily fluids.

A cough might not do it. But a sneeze in the face, contact with infected blood or sweat, or a handshake with someone caring for an ailing, incontinent relative easily could.

Ebola is one of the most deadly and contagious pathogens known to man, and no proven cure or vaccine clinically trialed on humans exists.

Confirmed Ebola patients are fed using an intricate arrangement that ensures the uninfected are never exposed to danger. Ebola is a disease that allows little time to wallow or grieve, despite the bonds the workers form with their patients. Patients brought to the centre leave with certificates confirming their recovery, or in heavily disinfected body bags.

Kailahun - Virologists call it the "hot zone" -- nature's version of a nuclear ground zero, the centre of an onslaught by one of the most deadly biological agents ever known to humankind.

Kailahun, a poor but resourceful trading post like any other in Sierra Leone until a few short months ago, has found itself at the epicentre of the worst-ever outbreak of the feared Ebola virus.

Nigeria had trained 800 volentiers to fight epidemic like Ebola. Four people have died and six more infected by Ebola in Nigeria as part of the worst ever outbreack of the deadly virus which has killed 1145 people across West Africa since the outbreak began this year. There government ha steped up a media compaign to raise awareness of how to prevent the spread of disease.

Ebola is the latest disease to capture the imagination of the US public. The reason why the US press is seized by this disease at this time is because two US missionaries working in West Africa were infected. Hundreds have died in Africa but because two Americans were also infected, the entire US medical establishment has been mobilized to find a way to prevent people from getting infected and if infected for being adequately treated for this disease.

Until such time that Ebola can be prevented, it has the capability to spread to many different countries. The World Health Organization has already declared a worldwide emergency. Interestingly, all the reasons for which Ebola became a problem in West Africa also exist in Pakistan.

We need the world to be aware that we need a vaccine. That is the only thing that is going to stop this. There is no evidence to suggest that this is true.

Original Article

Pattern of Hematological Disorders in Abbottabad

Hematological Disorders

1. Muhammad Usman Anjum 2. Syed Humayun Shah

1. Asstt. Prof. of Pathology, 2. Prof. of Pathology, Frontier Medical & Dental College, Abbottabad

ABSTRACT

Objective: To study the pattern of distribution of different hematological disorders in Abbottabad based on bone marrow examination results.

Study Design: Retrospective study.

Place and Duration of Study: This study was conducted at the Aksa Laboratory, Abbottabad from January 2011 to December 2013.

Materials and Methods: 143 patients, who presented to Aksa laboratory for bone marrow aspiration, were selected. Complete details of history, examination, blood tests were recorded. Bone marrow aspiration was performed using aseptic technique and bone marrow aspirate samples were prepared.

Results: Bone marrow aspirate results of 143 patients were studied. There were 104 cases (72.72%) of non-malignant hematological disorders while 39 (27.27%) of hematological malignancies. Among non-malignant hematological disorders, megaloblastic anemia was the most common disease affecting 31 patients (29.80%), followed by iron deficiency anemia in 20 patients (19.23%). There were 39 cases (27.27%) of hematological malignancies. Out of these, 23 cases (58.97%) were of acute leukemia followed in descending order by 5 cases (12.82%) of multiple myeloma and 4 cases (10.25%) of chronic myeloid leukemia.

Conclusion: Megaloblastic anemia was the most common disease followed by iron deficiency anemia among non-malignant hematological disorders. Acute leukemias were most common among malignant hematological disorders. Bone marrow aspiration was very useful in making a correct diagnosis and determining the cause of disease.

Key Words: Anemia, leukemia, malignant hematological disorders, non-malignant hematological disorders, bone marrow aspiration.

INTRODUCTION

Blood disorders are very common ranging from anemias to the advanced hematological malignancies. They could be nutritional anemias like megaloblastic or iron deficiency anemia or they may include hematological malignancies e.g. leukemias and lymphomas. However, the pattern of these disorders is different in different geographical areas. This variation in frequency of these disorders also exists in developing and developed countries.[1, 2]

Diseases can affect hematological system either directly or indirectly when they affect other organ systems but lead to hematological abnormalities at the same time, for example, storage diseases, cancers or hemoparasites.[3,4] This may be due to reduced or ineffective hemopoeisis in bone marrow, bone marrow involvement by abnormal cells, abnormal cell formation with their removal from the circulation, immune destruction, or their entrapment in overactive reticuloendothelial system.[5, 6]

Bone marrow examination is quite a useful test which has become very important these days for the diagnosis of hematological disorder.[7,8] Bone marrow aspiration provides detailed information about bone marrow cellularity, its architecture and the stage of maturation of different blood cells.[9] It helps in the diagnosis and staging of hematological malignancies.[2, 10-14] Therefore, it is an important diagnostic tool for hematological disorders. It is a non-invasive procedure. The risk of complications associated with this procedure is 0.08%.[15] Common complications are infection, bleeding and pain at the site of biopsy.[4, 11, 16]

In this study, we have studied the frequency of different hematological disorders in Abbottabad based on bone marrow aspiration results.

MATERIALS AND METHODS

The study was conducted from January 2011 to December 2013 at Aksa laboratory, Abbottabad. All the patients who were referred to this laboratory for bone marrow aspiration were selected. Complete history was taken and detailed physical examination was done, to look specifically for the presence of pallor, lymphadenopathy and hepatosplenomegaly. The complete blood count including hemoglobin, total and differential leucocyte count, total platelet count, reticulocyte count and blood indices were performed using haematology analyzer (Erma Ink, PLC 210). Peripheral blood smear examination was done after Leishman staining.

For bone marrow aspiration, standard protocol was followed.[14,17,18] The procedure was performed following aseptic technique. Illiac crest was the most common site used for this procedure. However, sternum was used for aspiration in obese patients. Patients were observed after the procedure to make sure that their vitals remained stable.

Sterile test tubes, containing anticoagulant (Ethylenediaminetetraacetic acid, EDTA), were used to collect bone marrow aspirate. The bone marrow aspirate was stained with Giemsa and Leishman stain and then examined for the presence of cellularity, megakaryocytes, immature cells, hemoparasites and the presence or absence of the iron stores (after Periodic acid-Schiff (PAS) staining).[14]

RESULTS

There were total 168 patients. Out of these 168 patients, 25 cases were not included in the study because either the bone marrow aspiration was unsuccessful or complete details of patient's record were not available. Rest of 143 patients were included in this study.

Out of these 143 patients, 79 (55.24%) were males and 64 (44.76%) were females as shown in Table 1. The male to female ratio was 1.2:1.

Table No.1: Gender distribution of study population

Gender	No of patients	Percentage
Male	79	55.24%
Female	64	44.76%
Total	143	100%

Frequency of different diseases as diagnosed on the basis of bone marrow aspiration examination results were shown in Table 2, 3, & 4. There were 104 cases (72.72%) of non-malignant hematological disorders while 39 (27.27%) of hematological malignancies.

Table No.2: Malignant & non-malignant hematological disorders on the basis of bone marrow aspiration examination

Disease Type	No of patients	Percentage
Non-Malignant Hematological Cases	104	72.72%
Malignant Hematological Cases	39	27.27%
Total	143	100%

Among non-malignant hematological disorders, megaloblastic anemia was the most common disease affecting 31 patients (29.80%), followed in descending order by iron deficiency anemia in 20 patients (19.23%), mixed deficiency in 9 cases (8.65%) and hemolytic anemia in 5 cases (4.80%) as shown in Table 3. There were 3 cases (2.88%) each of pancytopenia, aplastic anemia and lipid storage disorders. Among hemoparasites, there were 4 (3.84%) cases of visceral leishmaniasis.

Hematological malignancies accounted for about 39 cases (27.27%). Out of these, 23 cases (58.97%) were of acute leukemia including both acute myeloid and acute lymphocytic leukemia; 09 cases (23.07%) were of acute leukemia while 8 cases (20.15%) of acute myeloid and 06 cases (15.38%) of acute lymphoblastic leukemia, followed by 5 cases (12.82%) of multiple myeloma and 4 cases (10.25%) of chronic myeloid leukemia as shown in Table 4.

Table No.3: Spectrum of Non-malignant hematological disorders

Disease	No of patients	Percentage
Megaloblastic Anemia	31	29.80%
Iron Deficiency Anemia	20	19.23%
Mixed Deficiency Anemia	09	8.65%
Normal Active Marrow	13	12.5%
Reactive Marrow	6	5.76%
Hemolytic Anemia	5	4.80%
Visceral Leishmaniasis	4	3.84%
Pancytopenia	3	2.88%
Aplastic Anemia	3	2.88%
Storage Disease	3	2.88%
Idiopathic Thrombo-cytopenic Purpura	2	1.92%
Hypoplastic Marrow	2	1.92%
Depressed Erythropoeisis	2	1.92%
Myeloid Hyperplastic Marrow	1	1%
Total	104	72.72%

Hematological malignancies accounted for about 39 cases (27.27%). Out of these, 23 cases (58.97%) were of acute leukemia including both acute myeloid and acute lymphocytic leukemia; 09 cases (23.07%) were of acute leukemia while 8 cases (20.15%) of acute myeloid and 06 cases (15.38%) of acute lymphoblastic leukemia, followed by 5 cases (12.82%) of multiple myeloma and 4 cases (10.25%) of chronic myeloid leukemia as shown in Table 4.

Table No.4. Spectrum of malignant hematological disorders

Disease	No. of patients	Percentage
Acute Leukemia (Uncharacterized)	9	23.07%
Acute Lymphoblastic Leukemia	8	20.15%
Acute Myeloid Leukemia	6	15.38%
Multiple Myeloma	5	12.82%
Chronic Myeloid Leukemia	4	10.25%
Chronic Lymphocytic Leukemia	2	05.12%
Lymphoproliferative Disorder	4	10.25%
Lymphoma	1	02.56%
Total	39	27.27%

DISCUSSION

There is a broad range of hematological disorders including diseases ranging from nutritional anemias to

hematological malignancies. Spectrum of these diseases is different among different geographical areas.

Our study showed that nutritional deficiency anemias were very common (57.69%) non-malignant hematological disorders. Among these, megaloblastic anemia has the highest incidence. This has also been shown by other studies.[2,19] But, Rahim et all have shown in their study that iron deficiency anemia is least prevalent type of nutritional anemia.[2] Contrary to this, our study has shown that iron deficiency anemia was the second most common type of anemia followed by mixed deficiency anemia. This is in line with other studies which had shown iron deficiency to be the common nutritional anemia in the world [20, 21].

In this study, 39 (27.27%) cases of hematological malignancies were found in our study group. Out of these cases, 23 (58.97%) were of acute leukemia. This shows that acute leukemia is the most common hematological malignancy in our patients. There were 8 (34.78%) cases of acute lymphoblastic leukemia while 6 (26.08%) were acute myeloid leukemia. This is in consistent with the study done by Shazia et al where acute lymphoblastic leukemia was the commonest hematological malignancy followed by acute myeloid leukemia.[22] In our study, about 9 cases (39.13%) were of acute leukemia but these were difficult to characterize into any of the groups. These cases require further advanced investigations. Other malignancies in this study were multiple myeloma (12.82%) and chronic myeloid leukemia (10.25%).

There were 4 (3.84%) cases of visceral leishmaniasis. Visceral leishmaniasis can lead to hematological abnormalities e.g. pancytopenia, myelofibosis and myelodysplasia.[23] The incidence of visceral leishmaniasis is low as shown in our study which corroborates the results obtained in earlier studies.[2, 4, 24] Hemoparasites can be a cause of hematological abnormality and they should be an important part of work-up of any patient with advanced hematological disorder.[4, 23]

There were 3 cases (2.88%) of lipid storage disorders. These disorders frequently involves bone marrow and can manifest as hematological abnormalities e.g. anemia, leucopenia & thrombocytopenia [3, 25-27]. Bone marrow aspiration is quite useful in diagnosing these disorders.

Idiopathic Thrombocytopenic Purpura (ITP) is a common hematological disorder. In our study, there were two cases (1.92%) of ITP. This incidence is quite low as compared to other studies. The frequency of ITP was 9.43% and 7.8% in studies conducted by Rahim et al and Zeb jan et al respectively. [2, 22]

CONCLUSION

Our study has shown that the megaloblastic anemia was the most common diagnosis in patients with non-malignant hematological disorders while acute leukemias were the most common in the group of malignant ones. Many diseases e.g. visceral leishmaniasis & storage disorders, can present in the form of hematological abnormalities. Hence, they should be considered as a part of work up of any patient presenting with blood disorders.

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Original Article

Diabetes with diseases

Diabetics and their Diseases, What do they know? Assessing Knowledge Level among Diabetic Patients

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ABSTRACT

Background: Limb loss is one of the most devastating complications of Diabetes mellitus. Prevention is possible only with a well educated patient. We set out to assess patient education by physicians and foot care awareness in patients attending our DHQ Hospital.

Study Design: Descriptive study

Place and Duration of Study: This study was carried out at the DHQ Hospital, Mirpur, Azad Kashmir from 01.12.2012 to 30.03.2013.

Materials and Methods: This was a descriptive study involving 311 patients attending DHQ Hospital, Mirpur, Azad Kashmir. The patients were chosen by convenience sampling. The patients could be either type 1 or type 2 diabetics. A total of 18 multiple-choice questions were used. Patients less than 40 years were excluded from the study.

Results: 314 patients were enrolled in the study. 37.62% of patients were aged 40 to 50 years. Females comprised 52.41 % of the patients. 49.52% of patients were illiterate. About a third of patients (31.51%) visited their doctor weekly or fortnightly. A size-able number of patients (39.55%) had never or rarely been guided about life style changes by their doctors. 68.17% of patients had never or rarely been guided about diabetic complications. Only 23.15 % patients were aware about foot care. Pearson Chi-Square values were highly significant P<0.0001 for education and foot care awareness.

Conclusion: Patient education by physicians is almost non-existent in Pakistan and needs to be improved. Improving literacy will improve patient foot care awareness.

Key Words: Diabetes mellitus, Diabetic education, Diabetic foot care awareness

INTRODUCTION

Loss of a limb is one of the most devastating complications of Diabetes mellitus. Lower extremity amputations are a very common outcome of diabetic foot complications[1,2]. About 10-15% of diabetic patients develop foot ulcers at some stage in their lives[3]. Diabetic foot problems are responsible for nearly 50% of all diabetes related hospital admission. The risk of foot complications increases with poor management of the disease. Older male patients, members of certain racial groups, long standing diabetes and poor preventive foot care are also risk factors for amputation[4]. At present there are 374 million people with diabetes worldwide[5]. Pakistan has the 7th largest diabetic population in the world with 12.9% prevalence according to WHO estimates for 2008. The number of diabetics in Pakistan is projected to reach 11.5 million by 2025. With the number of diabetics ever on the increase it has become imperative to prevent long term complications of the disease in order to lower the burden on health care facilities. Diabetes education is accepted as an important part of care for diabetics. This is associated with improved disease knowledge, changed attitudes and enhanced skills needed to improve disease control[6-8]. Education levels of patients are an important determinant in chronic disease management. Literate patients are more likely to comply with patient education literature. They are also more likely to have enhanced disease knowledge.

Foot care education by attending physicians is the primary means of imparting foot awareness in diabetics. Failure to do so leads to an increased risk for foot ulceration leading to lower extremity amputation. Proper foot care education and periodic self-foot examinations are an effective method of preventing foot ulceration[9]. Access to affordable health care is an important determinant of outcomes in chronic diseases. The effects of foot ulceration are compounded by poor living conditions and poverty in developing countries[10]. This study looked at patient education by physicians about life style changes and disease complications. We also looked for foot care awareness in patients attending our DHQ Hospital.

MATERIALS AND METHODS

This was a descriptive study involving patients visiting District Headquarters Hospital, Mirpur, Azad Kashmir. Convenience sampling was applied and the number of patients chosen was adequate to provide a confidence level of 95% and a confidence interval of 5 to 7%. An 18 part questionnaire was designed. The questionnaire

was administered by a doctor, who explained each question to the patient. Inclusion criteria were Type I and type II diabetics of any sex with diabetes of more than 1 year duration. Patients less than 40 years were excluded from the study. Data was analyzed by using SPSS version 11. Simple frequency distribution tables were generated for dependent and independent variables. A chi-square test ($\chi 2$) was applied to find out the association of different variables.

RESULTS

314 patients were enrolled in the study. 3 patients had incomplete data and were rejected. Analysis of the remaining 311 cases was performed using SPSS 11.

Table No.1: Distribution of socio-demographic characteristics among persons with diabetes attending DHQ Hospital Mirpur, AJK, Pakistan (n - 311)

Characteristics	Number	Percentage
Sex		
Male	148	47.59
Female	163	52.41
Age		
40-50 years	117	37.62
51-60 years	138	44.37
Above 60 years	56	18.01
Education		
Illiterate	154	49.52
Up to primary	77	24.76
Secondary to intermediate	33	10.61
Graduate and above	47	15.11
Income		
Less than Rs:11000 per month	130	41.80
Rs: 11000 to Rs: 23000 per month	98	31.51
More than Rs:23000 per month	83	26.69
Family Size		
Up to 4 members	122	39.23
More than 4 members	189	60.77
Employment Status		
Employed	73	23.15
Not employed	109	35.05
Support from other sources	130	41.80

37.62% of patients were aged 40 to 50 years. 44.35% were in the 50 to 60 years group while patients over the age of 60 years were 18.0% of the total. Females comprised 52.41 % of the patients. 49.52% of patients were illiterate. 15.11% of the patients were graduates or postgraduates. 93.57% of patients were married while 5.79% had lost a partner either through divorce or death. Patients with a monthly family income above Rs. 23,000 comprised only 26.69% with a large percentage (41.80 %) of patients earning less than Rs. 11,000 per month.

Table No.2: Distribution of clinical characteristics among persons with diabetes attending DHQ Hospital Mirpur, AJK, Pakistan (n = 311)

Characteristics	Number	Percentage
Duration of Diabetes		
Less than 3 years	85	27.33
3 to 10 years	158	50.81
More than 10 years	68	21.86
Treatment Mode		
Oral hypoglycemic agents	161	51.77
Insulin	50	16.08
Both oral hypoglycemic agents and insulin	99	31.83
None	1	0.32
Frequency of doctor visits		
Once in a fortnight	98	31.51
Once a month	213	68.49
Blood sugar monitoring		
Twice a week	63	20.26
Once fortnightly	75	24.12
Once in three weeks	38	12.22
Monthly	135	43.41

Table No.3: Distribution of patient education and foot care awareness among persons with diabetes attending DHQ Hospital Mirpur, AJK, Pakistan (n = 311)

Characteristics	Number	Percentage
Physician initiated lifestyle modification		
Never	47	15.11
Few times	76	24.44
Regularly	188	60.45
Physician imparted disease complications		
Never	57	18.33
Few times	98	31.51
Regularly	156	50.16
Awareness about foot care		
No	239	76.84
Yes	72	23.15
Suffered Foot Complications		
Yes	122	39.22
No	189	60.77
Amputation of foot or digit		
Yes	39	12.54
No	272	87.46

Only 39.23% of patients belonged to a small family comprising of 4 or less members. 60.77% of patients had families larger than 5 members. 23.15% were gainfully employed while 41.80% of patients were dependent on other sources of income. 35.05% of patients were unemployed. (Table 1)

27.33% patients had had Diabetes for less than 3 years. 50.81% patients were sufferings from Diabetes for 3 to 10 years. More than half the patients (51.77%) were on oral hypoglycemic agents, while 31.83% of patients were using both insulin and oral hypoglycemic agents.

About a third of patients (31.51%) visited their doctor weekly or fortnightly. 20.26% of patients tested their blood sugar levels twice a week while 44% tested just once a month. (Table 2)

A sizeable number of patients (39.55%) had never or rarely been guided about life style changes by their doctors. 68.17% of patients had never or rarely been guided about diabetic complications. Only 23.15 % patients were aware about foot care while the rest were largely unaware about the importance of foot care. 60.77% of patients had never suffered a foot complication. The vast majority of patients (94.21%) were satisfied with the care they received. Only 25.40% of patients were unable to afford treatment expenses. 39 patients (12.54%) had undergone an amputation of some kind due to diabetic foot complication. (Table 3)

Pearson Chi-Square values were highly significant P<0.0001 for education and foot care awareness. There was no statistically significant association between education and amputation rate (P value= 0.3390). Pearson Chi-Square values were also highly significant P<0.0001 for family income and foot care awareness. There was a very statistically significant correlation between the number of doctor visits and foot care awareness (P value=0.0032)

DISCUSSION

Diabetes has emerged as a global epidemic in recent years. With the frightening increase in numbers of diabetics, comes the need to improve health care facilities to cater for the projected increase in complications. Diabetes is expensive to treat and once complications set in the cost of care may be out of reach of a large segment of population[11]. Foot complications take up a huge amount of monetary and human resources. Generally diabetic patients have a poor understanding of their disease and its complications[12].

Improving patient education is one way to decrease foot complications. All physicians caring for diabetic patients should take the opportunity to educate their patients regarding the disease and its complications. Patient uptake of disease education is intimately related to patient literacy. In our study 49.36% of patients were illiterate. These are a little better than literacy rates in Pakistan which are around 54.9% (UNESCO Institute of Statistics). A study conducted in India concluded that poor formal education was associated with poor foot care knowledge underlining the relationship between education and disease knowledge[13]. This correlates well with our finding of Pearson Chi-Square values which were highly significant (P<0.0001) for education and foot care awareness.

Patient literacy is of no value if patients do not receive disease education from primary care physicians. Our study found a large gap in patient education by physicians. More than half the patients (57%) visited their doctors once a month. These monthly visits are a valuable opportunity for patient education. However, almost 40% of patients had never or rarely been educated about life style modifications. One study from Karachi found 84% of study participants had not been counseled for lifestyle changes during their treatment[14]. Primary care physicians should take every opportunity to educate patients about their disease and its complications. Nearly 50% of our patients had not been educated about diabetic complications. This correlates well with a study from Peshawar where only 45% of the patients had been educated about diabetes care and the main source of information was a doctor for 78% of the patients[15].

Frighteningly less than a quarter of patients interviewed were aware about foot care. Poor foot care is intimately related to foot ulceration which is directly responsible for approximately 85% of all amputations performed in patients with diabetes[16,17]. Only 23.15% of our patients were aware about the need for foot care. This is in stark contrast to a study from India where 56.4% of the urban population and 46.6% of rural population had been educated regarding foot care in diabetes[18]. A South African study found 53% of the population knowledgeable on basic foot hygiene[19].

The frequency of blood glucose monitoring by patients in our study was quite encouraging. All patients checked their blood sugar levels at least once a month. Some 20% checked their blood sugar levels weekly. This was significantly less than the study from Peshawar where 61% of patients checked their blood sugar in a week[15].

Our study highlighted the strong correlation between education and foot care awareness (P<0.0001). This is in keeping with a similar trend in India, where there was a significant correlation for foot problems with family income and educational status[18]. We also found a highly significant correlation (P<0.0001) for family income and foot care awareness. Frequent interactions with health providers resulted in a statistically significant improved foot care awareness (P= 0.0032). This was in keeping with a study from Karachi where regular followed-up patients had much better disease knowledge overall[20].

CONCLUSION

This study reveals the paucity of disease knowledge of patients. Patient education by physicians is almost non-existent in Pakistan and needs to be improved. Improving literacy will improve patient foot care awareness.

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Original Article

Maternal Risk Factors in Preterm Neonates

Maternal Risk Factors

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ABSTRACT

Objective: To study the frequency of maternal risk factors in preterm birth.
Study Design: Descriptive - Cross sectional study
Place and Duration of Study: This study was carried at Hamdard University Hospital, Karachi from January 2013 to December 2013
Materials and Methods: All preterm neonates were examined at Hamdard University Hospital. Mothers who delivered neonates before 37 weeks of gestation and their suspected maternal risk factors contributing to preterm labor were registered on a pre-designed proforma. Keeping prevalence of 14.9%[1], bound of error 5%, confidence interval 95%, the calculated sample size is 195. There was Non-probability consecutive sampling. Mothers who delivered live born babies in Hamdard hospital Karachi before 37 weeks of gestation. Babies were born after 37 weeks of gestation and still birth.
Results: During the study period, 195 mothers who delivered preterm neonates were included. Out of 195 patients, anemia was found as most common risk factor for preterm delivery in 50.8% mothers, followed by history of previous abortion and premature rupture of membrane with 23.0% and 13.8% respectively. History of previous preterm delivery, pre-eclampsia and antepartum hemorrhage were the least reported risk factors at 4.1% each in our study.
Conclusion: Prematurity is still a major problem in Pakistan. Early detection of the most common maternal risk factors as: nutritional status of women (BMI), previous abortions, previous preterm births will reduce the prematurity rate, medical cost and suffering of the parents.
Key Words: Newborn, Prematurity, Maternal Risk Factors.

INTRODUCTION

Preterm birth (PTB) is the leading cause of infant morbidity and mortality in the world and has long term consequences for health.[1-3] The World Health Organization (WHO) defines preterm birth as any birth before 37 completed weeks of gestation or fewer than 259 days.[1]

In 2005, WHO estimated 13 million infants were born before 37 completed weeks of gestation while in 2010, the global average preterm birth was 11.1%, giving a worldwide total of 14.9 million. Approximately 11 million (85%) of these preterm births are concentrated in Africa and Asia.[4,5] Basically, preterm birth is directly responsible for an estimated one million neonatal deaths annually and it is also an important contributor to child morbidities. Children who are born prematurely, accounts for a number of problems in their later life including retinopathy of prematurity,[6] cerebral palsy,[7] jaundice,[8] infections,[9] sensory deficits, learning disabilities and respiratory illness.[10]

The maternal risk factors like age >35 years, urinary tract infection in pregnancy, abruptio-placentae, polyhydramnios, preterm rupture of membranes, intrauterine death,[11] maternal smoking,[12] diabetes mellitus and hypertension among pregnant women are leading causes of preterm delivery.[13] High pregravid body mass index (BMI) is also an important contributing factor in preterm delivery.[14]

In a study, common maternal risk factors associated with preterm birth were hypertensive disorders of pregnancy (21.4%), height <1.50m (16.8%), premature rupture of membranes (17.5%), and fetal distress (14.9%). Mean birth weight for preterm babies was 2452 grams while the birth weight for term babies was 2978 grams.[1]

Another study showed a significant increased risk of preterm birth (PTB) in women with body mass index(BMI)>25, women employed in heavy work, history of previous abortion or previous cesarean section was positively correlated to the increased risk of PTB.[15]

The reduction of preterm birth is a demanding proposal nowadays since the cause, in many situations, is hard to get hold of. The aim of this research was to determine the frequency of possible maternal risk factors which lead to preterm deliveries in patients delivered at the tertiary care hospitals of Karachi and the results of the study would help to give attention to the highly prevalent maternal risk factors. Early Identification of at-risk women and their risk factors for preterm birth is important for targeting the services and initiation of risk-specific interventions. Study of risk factors might

also provide important insights leading to new discoveries for prevention and management of preterm births.

MATERIALS AND METHODS

The single centre observational cross-sectional study was carried out in Hamdard University Hospital, Karachi. Approval for the study was taken from the Institutional Ethical Committee. The main criteria for inclusion were: mother who had delivered babies before 37 weeks of gestation during study period. The source of data had been taken form Gynae and Obstetrics unit and Paediatric department of Hamdard University Hospital Karachi. The baseline characteristics such as maternal age, nutritional status of mother (BMI), gravida as well as maternal risk factors such as anemia, history of previous abortion, premature rupture of membranes, history of previous preterm delivery, preeclampsia, ante partum hemorrhage and maternal smoking were recorded in predesigned proforma. The gestational age was assessed by using date of last menstrual period and confirmed by ultrasound. Anaemia was assessed by haemoglobin <10 g/dl. The collected data was analyzed by using SPSS version 17. Frequencies and percentages were calculated for qualitative variables i.e. maternal age groups (years), maternal body mass (BMI), maternal gravida, anemia, history of previous abortion, premature rupture of membranes, history of previous preterm delivery, preeclampsia and ante partum hemorrhage. Stratification was done with regards to maternal age and nutritional status of mother (BMI) to see the effect of these modifiers on outcome of interest by using chi square test and considering $p \leq 0.05$ as significant.

RESULTS

During the study period 195 mothers were included who delivered preterm neonates at hamdard hospital Karachi. On the basis of age group, 79(40.5%) mothers were less than 25 years of age, 76(38.9%) were between 25 to 35 years of age while remaining 40(20.5%) were greater than 35 years of age. Based on nutritional status, majority of the mothers i.e. 110(56.4%) were found to have BMI lower than 20 while remaining 85(43.6%) had BMI greater than 20. A detailed obstetric history was also obtained from every woman. Results revealed that, 62(31.8%) mothers were primigravida, 78(40.0%) had gravidity between 2 and 5, while remaining 55(28.2%) mothers had gravidity greater than 5 (Table 1).

The maternal risk factors reported in this study were anemia, history of previous abortion, premature rupture of membrane, history of previous preterm delivery, pre-eclampsia and antepartum hemorrhage. Anemia was found as the most common risk factor for preterm delivery with 50.8%, followed by history of previous abortion and premature rupture of membrane with 23.0% and 13.8% respectively. History of previous preterm delivery, pre-eclampsia and antepartum hemorrhage were the least reported risk factors at 4.1% each as shown in Table 2.

Table No.1:Maternal Characteristics (n=195)

	Number	Percent (%)
Maternal Age (years)		
< 25 years	79	40.5
25 – 35 years	76	38.9
> 35 years	40	20.5
Maternal Body Mass Index (BMI)		
< 20	110	56.4
>20	85	43.6
Maternal Gravida		
Primigravida	62	31.8
2-5	78	40.0
>5	55	28.2

TableNo.2: Maternal risk factors (n=195)

Risk factor	Number of cases	Percent (%)
Anemia	99	50.8
History of previous abortion	45	23.0
Premature rupture of membrane	27	13.8
History of previous preterm delivery	8	4.1
Pre-eclampsia	8	4.1
Antepartum hemorrhage	8	4.1
Total	195	100

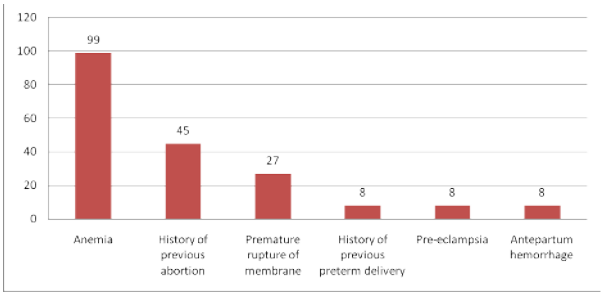

Figure No.1:Maternal Risk Factors

Significant association between mother's BMI status and different maternal risk factors were observed at 5% significance level. Results revealed that anemia (p value=0.008), history of previous abortion (p-value=0.016) and premature rupture of membrane (p-value=0.023) were associated with BMI lower than 20. However, no such association was observed between lower BMI and other risk factors including history of previous preterm delivery (p-value=0.721), pre-eclampsia (p-value=1.0), antepartum hemorrhage (p-value=0.722).

Furthermore, maternal age was also significantly associated with common risk factors found in this study. Results revealed that anemia (p-value= 0.05) and history of previous abortion (p-value=0.001) were associated with maternal age > 35 years. However, no such association was observed between mother's age and other risk factors including premature rupture of membrane (p-value=0.097), history of previous preterm delivery (p-value=0.864), pre-eclampsia (p-value= 0.902), antepartum hemorrhage (p-value=0.902). (Table 3).

Table No.3: Association of maternal risk factors with maternal age groups and maternal body mass index groups (BMI)

Risk factor	Maternal Age (P-value)	Maternal BMI (P-value)
Anemia	.05*	.008**
History of previous abortion	.001**	.016*
Premature rupture of membrane	.097	.023*
History of previous preterm delivery	.864	.0721***
Pre-eclampsia	.902	1.0***
Antepartum hemorrhage	.902	.722***

* Significant at 0.05 level
** Significant at 0.01 level
*** Not Significant at 0.05 level

DISCUSSION

Preterm neonates are major cause of perinatal morbidity and mortality. The management of these neonates, including the long term management, cost is considerably high in underdeveloped countries.

In our study, maternal characteristics i.e. maternal age, poor nutritional status, gravidity as well as maternal common risk factors i.e. anemia, history of previous abortion, premature rupture of membrane, history of previous preterm delivery, pre-eclampsia and antepartum hemorrhage were included which increase the risk of preterm birth.

The maternal characteristic in our study i.e. maternal age, we found that 40.5% mothers were under the age of 25 years. This finding is in agreement with other report.[6] Maternal malnutritional status is another characteristic that cause preterm delivery. In our study maternal malnutrition i.e. BMI below 20 (56.4%) is consistent with study by Mohsinal S.[17] Another maternal characteristic gravidity is not a major factor in our study while in other studies maternal gravidity is considered as a contributory factor for pre term delivery.[18,19]

Basically the highly prevalent maternal risk factors play significant role in preterm delivery. In our study, the most frequent maternal factor was anemia 50.8%, which was comparable with other studies.[14,18,19] History of previous abortions has also reported as a contributory factor in other studies while in our study its prevalence was 23%.[20] In our study 13.8% mothers had history of premature rupture of membrane while it was 78% as reported in a study conducted by Mink.[21] Previous history of preterm delivery was 4.1% in our study while this finding is again inconsistent with other studies.[22,23] Other factors like Pre eclampsia, antepartum hemorrhage were not a contributory factor in our study which was again not consistent with other studies.[24]

In our study, maternal risk factors i.e. anemia (p value=0.008), history of previous abortion (p-value=0.016) and premature rupture of membrane (p-value=0.023) were associated with BMI lower than 20. Maternal age was also significantly associated with common risk factors found in this study. Results revealed that anemia (p-value= 0.05) and history of previous abortion (p-value=0.001) were associated with maternal age >35 years while these findings were also consistent with other study.[5]

The number of preterm deliveries are increasing, and the possible reason could be that mothers are not aware of the risk factors that could lead to this condition. Efforts should be made through public awareness programmes about the possible risk factors of preterm delivery.

CONCLUSION

Prematurity is still a major problem in Pakistan. Early detection of the most common maternal risk factors as: nutritional status of women (BM)I, previous abortions, previous preterm births will reduce the prematurity rate, medical cost and suffering of the parents.

In resource poor settings with high burden of preterm birth, the women should be encouraged to seek antenatal care from qualified health providers and to maintain good nutritional status during the pregnancy.

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Original Article

T.B.

TB Entropy among Urban Inhabitants: A Study of Community Perceived Opinion about Tuberculosis

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ABSTRACT

Objective: Specific objective of the study was to determine the level of information and awareness regarding TB among the urban dwellers of Malikwal.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted in UC-Tehsil Malikwal District Mandi Bahauddin. Duration of study lasts from Jan-2013 to March-2013.

Materials and Methods: With the help of structured questionnaire the data of 70 respondents were collected. Quality of questionnaire was improved with the help of recommendations of pretesting activity. After taking verbal consent data was gathered by enumerators. Data was entered in EpiData software and analyzed in SPSS.

Results: Data shows the 58.6% participation of age group 20-30 years, 70:30% ratio of male and female representation, 42.9% respondents passed their college level of education, among 70 participants 39 reported cough lasts longer than three weeks as sign & symptom of TB, 61 (n=70) were those who said that through polluted air TB virus effects general population, 59 (n=70) reported that through covering mouth and nose during cough and sneezing is necessary to prevent TB, 66 (n=70) respondents said that anybody will be infected by TB, 77.1% were of the view that by using specific medication TB can be cured by getting the services from government clinic as reported 91.4%, 80% of sample said that TB treatment and diagnosis is free of cost in Pakistan as spread information by TV as reported 64.3%.

Conclusion: Government departments along with line departments and private stack holders are required to ensure wider level of implementation of projects about the social awareness on TB containing quality of information while using various means of IC&T tools including media to cover the masses.

Key Words: TB, Urban inhabitants, diagnosis and treatment, awareness on TB

INTRODUCTION

World widely, Tuberculosis (TB) remains a health dilemma. Due to TB ill-health status is reported. TB is second major leading cause of death after HIV and spread among million of peoples every year globally. Most recent statistics depicting that there were around 9 million new cases in 2011 was reported and 1.4 million deaths were occurred due to TB[1].

South-East Asia carrying one third of the world TB burden as earlier data show that an estimated 4.88 million prevalent cases with annual rate of 3.17 million cases of TB[2]. Globally, every year about 9 million people become infected by TB virus and among them 1.6 million die. Internationally, Pakistan ranks eighth for the high TB incidence. In Pakistan, the prevalence of TB is 297 cases per 100,000 population and nearly 0.3 million new cases arise each year[3].

Lack of knowledge about the disease and stigmatization causes underutilization of the services, delay in seeking diagnosis, and poor treatment compliance[4,5]. Better knowledge of TB is related with better health-seeking behaviour[6]. In Pakistan where 26% of TB patients have not heard about the disease before diagnosis, it is not surprising to note that 10% of general population has not heard of TB[7]. In studies from neighboring country India, 56-99% of population was aware of the disease TB[8]. Our results in this regard are alarming as poor knowledge is considered to be one of the reasons for high burden of TB in Pakistan[9].

Globally, TB is among the most debatable disease from couple of decades. Especially when we discussed the situation of world developing countries, TB is more well-known disease in urban areas as well as in rural areas. In Pakistan, number of NGO's working to spread education on TB along with treatment of TB in both urban and areas. Still the situation of TB is a highlighted and debatable issue in all provinces of Pakistan. This research focused to explore the prevalence of knowledge about TB, stigma and treatment concerns to get treated among urban dwellers of Tehsil Malikwal of District Mandi Bahauddin.

MATERIALS AND METHODS

This study was conducted in UC-45 Tehsil Malikwal, District Mandi Bahauddin to gather the existing knowledge of urban residents about TB and to get information on issues related to the treatment of TB. To

collect the opinion from study respondents a structured questionnaire was developed with the help of existing literature available on TB issues. Questionnaire covered the areas of information from basic demographic information to TB symptoms, TB treatment, treatment duration, how TB is contracted by patients and how it is prevented. Tool was piloted under similar circumstances and improved with the findings received from piloting activity. A sample of 70 respondents was randomly interviewed for data collection with their verbal consent to be a part of study. After data collection codes were entered in EpiData. Then EpiData file was exported in SPSS for further analysis.

RESULTS

Table 1 shows the distribution of respondents with respect to their age. Data show that 58.6% of the respondents belong to the age 20-30 years, 17.1% were those having an age limit between 31-40 years, 14.3% belonged to 41-50 years and 10% were those respondents with age 51 and above.

Table No. 1: Age of respondents

Age	Frequency	Percent
20-30	41	58.6
31-40	12	17.1
41-50	10	14.3
51+	7	10
Total	70	100

Table No. 2: Gender of respondents

Type	Frequency	Percent
Male	49	70
Female	21	30
Total	70	100

Above table shows the distribution of respondents as per their gender to explore the opinion of both partners of society. Figure shows 70% respondents were male and remaining 30% were females.

Table No. 3 Highest Level of Education

Category	Frequency	Percent
No School	3	4.3
Primary	6	8.6
High School	11	15.7
College	30	42.9
Higher education	17	24.3
Religious schooling only	2	2.9
Other Informal Education	1	1.4
Total	70	100

Table 3 shows the educational status of the study respondents. Among 70 respondents, 4.3% were having no education, 8.6% passed primary, 15.7% respondents passed their high school examination, 42.9% of the sample were bachelors, 24.3% were received their masters' degree.

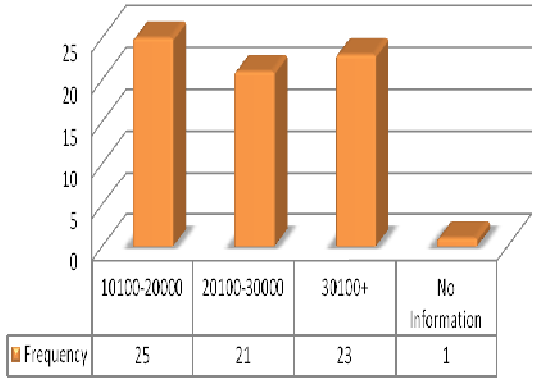


Figure No.1: Monthly income of family

Above figure shows that 25 (n=70) respondents reported their family income was in between Rs. 101000 – 20000/-. 21 had their family income in the range of Rs. 20100 – 30000/-. 23 respondents earned Rs. 30100/or more per month.

Table No. 4: Signs and Symptoms of TB

Category	Frequency
Cough	15 (n=70)
Cough lasts longer than 3 weeks	39 (n=70)
Blood with Coughing	20 (n=70)
Weight loss	25 (n=70)
Chest pain	5 (n=70)
Shortage of breath	20 (n=70)
Fever	1(n=70)

Table 4 is depicting the existing knowledge of the respondents of study about signs and symptoms of TB. Results show the responses against total sample of 70 respondents, among them 15 respondents said that cough as TB sign, cough cases lasting for more than 3 weeks were reported by 39 (n=70) respondents as sign and symptom of TB. The case of blood during coughing was reported among 20 respondents. In 25 cases, participants reported weight loss as a sign and symptom of TB. Chest pain was reported by 5 respondents, shortage of breath was reported by 20 study participants fever was only reported by one respondent.

Table No. 5: How Can a Person Get TB

Category	Frequency
Through the air when a person with TB coughs or sneezes	61 (n=70)
Through sharing dishes/pots	4 (n=70)
Through touching objects in public place	**17 (n=70)**

Very importantly in this research the efforts were made to collect the opinion of general public of Malikwal city. When respondents were asked about how one person can contract TB. In 61 cases (n=70) participants said that sitting near the patients can be a source of getting infected. Only 4 people were of the view that one may get TB by using the used utensils of TB patients. 17 respondents said that a person can get TB by touching infected items in public place.

Table No. 6: How Can a Person Prevent Getting TB

Category	Frequency
Covering mouth and nose when coughing or sneezing	59 (n=70)
Washing hands after touching objects in public places	17 (n=70)
Through good nutrition	2 (n=70)
Avoid sharing dishes/pots	2 (n=70)
By vaccination (BCG)	1 (n=70)

Table 6 explains the perceived knowledge of the study respondents about prevention of the disease. Among study sample 59 (n=70) replied that through covering mouth and nose during coughing or sneezing especially at public places. In 17 cases, respondents told that via washing hands after touching different objects will be helpful to prevent. Only 2 (n=70) were in favor of good nutrition, the other 2 added that effective prevention practices can help reduce the chances of contracting TB. 1 respondent encircled that the vaccination is a best source to prevent TB.

Table No. 7: Who can be infected with TB

Category	Frequency
Any body	66 (n=70)
Only poor people	3 (n=70)
Only people living with HIV/AIDS	2 (n=70)

Table 7 depicts that the existing level of education of people of Malikwal about the possibility that who can be infected more easily by TB. More interestingly 66 respondents were of the view that anybody will be infected through the virus of TB during his routine life. Only 3 participants said that TB is common among poor people and 2 among 70 said that HIV/AIDS patient could be infected by TB virus.

Table No. 8: How TB get Cured?

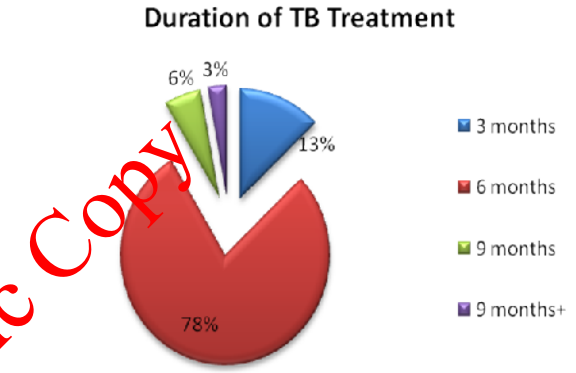
Category	Frequency	Percent
Herbal remedies	5	7.1
Home rest without medicine	2	4.3
Specific drugs given by health center	54	77.1
DOTS	8	11.4
Total	70	100

Table 8 focused on the area that how TB get cured. Among 70 respondents, 7.1% favored herbal remedies for treatment. 4.3% reported that home rest is a best solution to cure TB. 77.1% of respondents told the only medicines can cure the problem.

Table No. 9: TB Can be treated from?

Category	Frequency	Percent
Private clinic	4	5.7
Government clinics or hospital	64	91.4
Traditional or homeopathic care providers	2	2.9
Total	70	100

Table 9 shows the responses of participants about the place from where TB patients get treatment. In 5.7% cases respondents favored private clinic as place of treatment, 91.4% said government clinic or hospital and only 2.9% of the sample referred to homeopaths or traditional curing methods.



Pie-Chart: Duration of TB Treatment

Above pie-chart explains the knowledge of respondents about duration of TB treatment.

Table No. 10: TB Diagnosis and Treatment in Pakistan

Category	Frequency	Percent
Free of charge	56	80
It is reason able priced	7	10
It is somehow/moderately expensive	7	10
Total	70	100

Table 10 shows 80% of the respondents said that TB diagnosis and treatment in Pakistan is totally free of cost, 10% said that it is reasonably priced and further 10% were of the view that it is somehow expensive in Pakistan.

Table No. 11: TB is a Serious Disease

Category	Frequency	Percent
Very serious	64	91.4
Somehow serious	4	5.7
Not very serious	2	2.9
Total	70	100

Table 11 explains that 91.4% of the study participants were of the view that TB is very serious disease, 5.7% said that it is serious and remaining 2.9% told that it is not a serious disease at all.

Table No. 12: Source of Information

Category	Frequency	Percent
TV	45	64.3
Radio	3	4.3
News papers and magazines	4	5.7
Health workers	3	4.3
Family, friends, neighbors and colleague	15	21.4
Total	70	100

Above table shows the responses of respondents about their knowledge of TB as a medical problem. 64.3% respondents indicated TV to be a source of information. 4.3% said 'radio', 5.7% revealed via newspapers or magazines. 4.3% said that through LHWs they sought information about TB. 21.4% of the participants opined that family, friends, neighbors and colleagues informed them about TB and related issues.

DISCUSSION

This study was designed to view the level of awareness and perception among urban residents of Malikwal regarding tuberculosis. Most commonly reported TB signs and symptoms were cough prolonging 3 weeks, blood with coughing and weight loss. This shows quite similar results as existing studies conducting in Nigeria, Malaysia and other Asian countries[10].

According to the protocol of Pakistan's TB control program TB diagnosis, counseling and treatment is fully free for every citizen of nation and basic theme of the program is based on referral mechanism. Earlier studies show that if people are not properly aware about free process of diagnosis and treatment then they will be less interested for diagnosis and treatment. Secondly, poor quality of information, less sensitization or low awareness about symptoms and treatment results in delays in case finding and poor treatment behavior. Pakistan is facing these two big issue generically[11-13].

Less awareness level regarding free diagnosis and treatment has been reported previously in Pakistan and China but now the scenario is different as explained in table 10 that 80% of the study respondents were of the view that in Pakistan TB diagnosis and treatment is free of charge[14,15].

In 64.3% cases, Television was reported as a main source of information for masses, showing consistency with the previous studies conducted in Pakistan[16]. In Punjab, television coverage per household is 59.5%[17] and TV is important for both rural and urban areas without geographical distinction. Electronic and print media could play an important role in a program based intervention for disease diagnosis and treatment[18]. Engaging the LHWs of NPFP and PHC in DOTS implementation program and creating awareness among communities that TB is curable through treatment and its cost free treatment can significantly improve the community level of awareness, diagnosis process and treatment adherence[19].

This study was focused to determine the existing knowledge of the respondents along with the source of information about signs and symptoms of TB, diagnosis and treatment, contracting and prevention of TB, its treatment duration and expenses of treatment and other relevant indicators. Study excluded others socio-economic and cultural beliefs held by study respondents. This might be an important area of discussion for further studies to explore socio-cultural beliefs and miss-conceptions of communities about TB.

CONCLUSION

The study explored that quality of information regarding tuberculosis among the urban population of Tehsil Malikwal of District Mandi Bahauddin. It is generally perceived that the urbanites usually are more informative and health conscious due to the industrial ecology and easy access to the print and electronic media. In addition, their spatial intimacy with the health facilities, health care staff and personnel is easy comparative to the population of country side. It is also felt that the rural people due to the low in literacy, education and day to day information lack general awareness on health issues. The study findings confirm that urban inhabitants do have more organized information on good practices of health. But the main reason for conducting this research was the alarming status of Pakistan being among the largest TB producing countries in the world. The data advocate that still there is room for more improvements and focused endeavors to expand the TB related information among the people especially Pakistanis. Poverty is the main reason considered responsible for TB in Pakistan and urban poverty is taken as more clutching for the urban poor as compared to the rural poverty. Therefore the TB among urbanites is mounting which can only be reduced with creating awareness and health sensitization regarding TB.

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Original Article

Sternal Wound Infection Following CABG: A Review of 1121 Patients

Sternal Infection after CABG

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ABSTRACT

Objective: to know incidence of sternal wound infection , microbacteria involved and associated risk factors so as practical steps should be made before hand to counter theses problems

Study Design: Case series study.

Place and Duration of Study: This study was conducted at Ch. Pervaiz Ellahi, Institute of Cardiology, Multan from 2012-2014.

Materials and Methods: Microbiological testing was conducted under supervision of a consultat microbiologist attached to the hospitals performing cardiac surgery. Infections were classified as in-hospital SSIs if occurring during the hospital stay, or post-discharge. Infections were recorded as sternal or harvest site infections. Associated Potential risk factors were recorded . A proforma was filled which was approved by hospital ethical committee.

Results: Over the study period , 1121 patients had CABG. Predominantly patients were male (mostly in age range of 50-76 with median age of 63 years). ASA score of 3 was recorded in majority of patients. The majority of patients were recorded as having an ASA score of 3 or 4, a clean wound, and antibiotic prophylaxis administered. Antibiotic prophylaxis in almost all cases.97 patients had sternal site infections, with one half of the cases detected in-hospital and the other half post-discharge.

Gram-positive bacteria were detected in 56% of cases having infections, 43% had Gram-negative bacteria and fungi (e.g. Candida albicans) 1 case.

Conclusion: The incidence of MRSA is increasing and to counter these we had to adopt methods.

Key Words: MRSA, Prevalence.

INTRODUCTION

Sternal wound infection following CABG pose substantial burden on healthcare systems as length of hospital stay and costs increases substantially.[1]

Factors that associated with increased risk of sternal wound infection are:[2-5]

1. Host factors (advanced age, obesity and diabetes)
2. procedural factors (wound class, duration of procedures and surgical technique)
3. infection control strategies(appropriate antibiotic prophylaxis, effective patient skin preparation).

Mediastinitis occurs in 0.25–5% of patients undergoing median sternotomy.Historically, mortality approached 50% in these patients.[6]

Sternal wound infections may be classified into three distinct types as described by Pairolero and Arnold

1. Type 1 wounds occur in the first several postoperative days and are usually sterile. This is consistent with early bony nonunion and may represent the earliest stage of infection and perhaps even the portal of entry for skin flora.
2. Type 2 infections, occurring in the first several weeks postoperatively are consistent with acute deep sternal wound infection, including sternal dehiscence, positive wound cultures, and cellulitis.
3. Type 3 infections, presenting months to years later, represent chronic wound infection and uncommonly represent true mediastinitis. They are usually confined to the sternum and overlying skin and may be related to osteonecrosis or persistent foreign body.

Speculation exists that dehiscence of the sternum precedes infection of the deeper soft tissues within the mediastinum.Similar to other bones in the body such as in the lower extremity or even the mandible, sternal instability may perhaps encourage infection rather than result from it.With absent bacterial contamination and resulting infection, this instability will develop into sternal nonunion as opposed to poststernotomy mediastinitis and osteomyelitis.[7]

Many countries have implemented standardised surveillance systems to monitor and report sternal infection after CABG ,largely based on surveillance methods developed by the US Centres for Disease Control and Prevention (CDC) National Healthcare Safety Network.[8-11]

Preoperative risk factors for the development of mediastinitis include older patients, COPD, smoking, ESRD, DM, chronic steroid or immunosuppressive use, morbid obesity including large, heavy breasts, prolonged ventilator support (>24 h), concurrent infection and reoperative surgery. Other variables include off midline sternotomies, osteoporosis, use of LIMA or RIMA, long cardiopulmonary bypass runs (>2 h), and transverse sternal fractures.

A high index of suspicion is encouraged for any patient with sternal instability or ‘click.’

However, firm diagnosis of mediastinitis or deep sternal wound infection is made by isolation of an organism from mediastinal fluid or tissue, chest pain, or fever associated with
bony instability.Sternal nonunion commonly results from failure of boney healing following median sternotomy. However, it is also seen in association with chest wall trauma. Patients with non-union may complain of pain or clicking associated with respiration. The study was designed to know incidence of sternal wound infection, microbacteria involved and associated risk factors so as practical steps should be made before hand to counter theses problems.

MATERIALS AND METHODS

The study period is from 2012-2014 in Ch. Pervaiz Ellahi Institute of Cardiology, Multan. Our inclusion criteria were all patients undergoing a CABG procedure that was defined by International Statistical Classification of Diseases and Related Health Problems, 10th Revision
Ethical approval was granted from hospital and Medical Research Human Research and Ethics Committee.
Microbiological testing was conducted under supervision of a consultant microbiologist attached to the hospitals performing cardiac surgery.
Infections were classified as in-hospital SSIs if occurring during the hospital stay, or post-discharge SSIs if detected after discharge and within 30 days post procedure (in case of implant in situ, the follow-up period was within one year). Infections also were classified as either superficial (involving skin/subcutaneous tissue) or complex (involving deep soft tissue, organ/space) infections . Infections were recorded as sternal or harvest site infection.
Associated Potential risk factors were recorded

1. patient characteristics including age, sex and American Society of Anaesthesiologists (ASA) score
    a. ASA score ranges from 1 to 5, indicating a
        i. patient being healthy
        ii. with mild systemic disease
        iii. with severe systemic disease
        iv. with severe systemic disease that is a constant threat to life
        v. patient who is not expected to survive without the operation
2. Procedural factors
    a. emergency vs. elective
    b. types of CABG surgery
    c. wound classification (clean vs. clean-contaminated)
    d. number of grafts
    e. use of antibiotic prophylaxis
3. patient factors
    a. medical comorbidities
    b. steroid intake
    c. malnutrion

Statistical analysis Was done using spss 11. Numerical and categorical data was calculated and analysed.

RESULTS

Results are tabulated in table 1. Over the study period , 1121 patients had CABG. Predominantly patients were male (mostly in age range of 50-76 with median age of 63 years). ASA score of 3 was recorded in majority of patients. The majority of patients were recorded as having an ASA score of 3 or 4, a clean wound, and antibiotic prophylaxis administered. Antibiotic prophylaxis in almost all cases. 97 patients had sternal site infections, with one half of the cases detected in-hospital and the other half post-discharge.
Gram-positive bacteria were detected in 56% of cases having infections. 43% had Gram-negative bacteria and fungi (e.g. *Candida albicans)* 1 case.
Following variables were identified as potential risk factors:

1. ASA score of 4 or 5
2. Urgent surgery
3. More than 3 grafts
4. Diabetes mellitus
5. Malnutrition
6. Smoker with element of COPD

DISCUSSION

Mediastinitis is characterized by an infection that begins as a small, focused area of infection in the mediastinal cavity just below the sternum. The ensuing inflammation and tissue necrosis infects the surrounding soft tissues beneath the sternum and mediastinal space, which may or may not include osteomyelitis of the sternum itself. Seventy percent of patients with mediastinitis require at least one additional surgical procedure for incision and drainage of the infected area. The standard of care is to perform a muscle flap to establish sufficient blood supply to the sternum to promote healing. Contributing factors to SSIs in general, and mediastinitis in particular, include the exogenous and endogenous sources that contaminate the surgical wound during the procedure. Exogenous sources include unsterile/ contaminated fluids, hair and skin cell shedding from the surgical team, and poor hand hygiene practices. Endogenous sources include the patient's own skin flora and the presence of an existing infection at a remote site. Our study is comparable that of HAI surveillance system Norway (1.1%) & NHSN system US (1.2%).[11-17].
Patients with chronic conditions such as renal failure, hypertension, chronic obstructive pulmonary disease (COPD), peripheral vascular disease (PVD), osteoporosis, and diabetes are at higher risk for experiencing post-op mediastinitis. Other risk factors include obesity, diabetes, smoking, hospitalization prior

to the surgical procedure, age, male gender, previous CABG procedures , an emergency procedure, and large

Table No.1: Demographic and clinical characteristics of patients CABG

Number of patients undergoing CABG procedures from 2012-2014 in Ch. Pervaiz Ellahi Institute of Cardiology				1121	
Sex		Male		Female	
		Number	%age	Number	%age
		980	87.42	141	13%
Age	category, years	Number		%age	
	<50	112		9.99	
	50-60	630		56.19	
	61-70	320		28.54	
	>70	59		5.26	
American Society of Anaesthesiologists score	1	23		2.05	
	2	66		5.88	
	3	871		77.69	
	4	100		8.92	
	5	61		5.44	
Priority of surgery		Urgent		Elective	
		Number	%age	Number	%age
		100	8.92	1021	92.18
CABG graft type		CABG with both sternal and graft site incisions		CABG with sternal site incisions only	
		Number	%age	Number	%age
		1100	98.20	21	1.80
Mean number of graft=2.5					
Wound		clean		Clean-contaminated	
		Number	%age	Number	%age
		1111	99.10	10	0.99
Preopearative antibiotics		All were given antibiotic prophylaxis			
SURGICAL SITE INFECTIONS					
Superficial Sternal site infection		Deep Sternal site ifection		Harvest site incision	
Number	%age	Number	%age	Number	%age
345	30.45	23	2.05	78	6.9
PATHOGENS					
Methicillin-sensitive Staphylococcus aureus (MSSA) 43.3%	methicillin-resistant Staphylococcus aureus (MRSA, 14.6%	Pseudomonas aeruginosa (8.3%),		Enterobacter spp. (6.7%).	

breast size. Most consistently reported in the literature as independent variables for mediastinitis are obesity, diabetes, and hospitalization prior to the procedure.[18-23] Mediastinitis Prevention Recommendations were developed that include :

1. Hand Hygiene,
2. Antibiotic Prophylaxis --- Therapeutic Guidelines recommend three options for antibiotic prophylaxis in cardiac surgery: cefazolin alone, a combination of flucloxacillin and gentamicin, or a combination of vancomycin and gentamicin. We follow these guide lines.

Our study indicate that increased risk of surgical site infections is because of increasing severity of illness. The underlying reason is that nearly all patients undergoing CABG surgery would have an ASA score ≥ 3. However, construction of these risk scores requires extensive and complex clinical data; their application to routine SSI surveillance data is subject to advancements of the underlying surveillance systems.[24-30].

CONCLUSION

Our analysis of 10 years of CABG surgical site infection surveillance data indicates the importance of Gram-negative organisms as causative pathogens, and emphasises the need to select appropriate prophylactic antibiotics for patients undergoing CABG procedures. An upward trend in complex sternal site infection rates can be partially explained by the increasing proportion of CABG patients with more severe underlying disease. Future research should focus on development of appropriate and adequate risk adjustment models to facilitate valid comparison of CABG surgical site infection rates across hospitals.

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Original Article

Urinary Tract Stone

Risk Factors in the Upper Urinary Tract Stone Disease in Peshawar and Charsadda

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ABSTRACT

Objective: The present study was design to know the biochemical Risk Factors of the upper urinary Tract Stone Disease in the Peoples of Peshawar and Charsadda District.

Study Design: Observational Study

Place and Duration of Study: This study was carried out at District Head Quarter Teaching Hospital Charsadda & Naseerullah Khan Babar Memorial Teaching Hospital Kohat Road Peshawar from 12th August 2012 to 11th August 2013.

Materials and Methods: One hundred subjects who were suffering from upper urinary tract stone disease were included in the study. The evidence of stone in the renal and history of spontaneous passage of stones in the urine were determined regarding Microscopic Examination.

Results: The age range of our subject was between 01 - 60 years. The mean age ± S.D of age of stone former for men was 34.6 ± 8.6 years and for female 30.8 ± 6.7 in N.S.F. Family history of stone disease was found in (16%) of patients. 4% in maternal side and 12% paternal.

Conclusion: The Serum Phosphate level was higher in S.F than N.S.F and is a risk factor for Upper Urinary Tract Stone Disease in Peshawar and Charsadda.

Key Words: Urolithiasis, Upper Urinary Tract, Stone disease, Hypercalcemia,

INTRODUCTION

Pakistan is situated in "stone belt" extending from Turkey, Israel, Iran, India, Thailand and Indonesia, having high incidence of urinary calculi. Calculus disease is endemic in Pakistan[1,2] perhaps the stone disease incidence in Pakistan is highest in the world[3, 4]. In Pakistan no effort has been made so far to localize the geographical high and low stone forming areas no detail studies are available on the clinical and etiological aspect of the disease[5]. The incidence of bladder stone in adult is dependent upon the changing demographic pattern of Pakistan. More people are surviving into the prostatic age and secondary stone have shown a rise[6]. Peshawar and Charsadda are lying in high stone incidence belt, but so far no study evaluating etiology and risk factors of stone disease in these areas have been done. Large number of patients suffering from urinary stone remain asymptomatic and they are diagnosed while investigation for some other problem. However those with symptomatic urolithiasis usually present with an acute episode of colic at lumber region on affected side. Episode typically occurs at late evening or early morning. Pain is abrupt in onset while patient is usually at rest. Sever pain is felt at flanks which radiate round the abdomen and towards the testicles in male and labia major in female. Nausea and vomiting, I usually associated with renal colic. Pain is of stabbing nature i.e. the patient narrate it as someone has stabbed in the flank [7]. Renal stone creates trouble some pain when it is trapped or impacted somewhere in urinary tract. This impaction of stone leads to partial or total obstruction of that segment of urinary tract. The obstructed segment is dilated and as these tubules are sensitive to stretch, pain stimuli are initiated. It is also suggested that prostaglandins are involved in the genesis of renal and ureteric colic. Therefore the present study was design to know the biochemical Risk Factors of the upper urinary Tract Stone Disease in the Peoples of Peshawar and Charsadda District. In order to have correct diagnosis of renal stone diseases, Urine analysis, Radiographic examination, Intravenous Urogram (I.V.U), Abdominal ultrasound, Renal angiography, Radio-isotope method investigations and diagnostics procedures are carried out.

MATERIALS AND METHODS

Subjects were selected from District Head Quarter Teaching Hospital Charsadda & Naseerullah Khan Babar Memorial Teaching Hospital Kohat Road Peshawar (Urology and General Surgical Units). One hundred subjects who were suffering from upper urinary tract stone disease were included in the study. The detailed clinical history and physical examination were made to exclude any disease which might affect our results. The diagnosis of urinary stone in upper tract will be based on X-ray evidence of stone in the renal or ureteric area and History of spontaneous passage of stone in the urine, criteria. Microscopic examination of the urine was carried out and those patients with pyuria i.e. white blood cells more than eight per high power field, were not included in the study. A Proforma giving details of patients history and family history of stone disease in immediate family (parents and off springs)

were filled. Blood was collected from the subjects during morning time between 9:00 – 11:00 AM 10 ml blood sample was collected from each subject in a disposable syringe without applying tourniquet and immediately put in the centrifuge tubes were left undisturbed till a firm clot settled down. Twenty four hours urinary sample was collected from each individual in three liter capacity plastic jars, previously washed with hydrochloric acid and then distilled water and finally three times with deionised water. The jars were dried by inverting them. To dried jars toluene (5ml) was added as preservative. After collection of urine, its pH was recorded immediately by using pH strips. Then 20ml of urine was sucked out with a glass pipette and delivered to two 10 ml screw capped. The remaining urine volume was measured in graduated cylinder already washed with deionised water, by subtracting the amount (5ml toluene) and adding 20 ml more to the noted volume for collected urine. Water samples were collected from the drinking source from which both patients and controls use to drink for most of the time. Collector was asked to make sure that one liter plastic jar previously washed and cleaned are utilized and filled without contamination. About one hundred sample from drinking source of respective areas of patients and control were collected and sent to Government Public Health Food Analysis Laboratory Peshawar for chemical analysis for human consumption.

The following serum estimations, urinary estimations and were performed on the collected sample, and analysis was carried out on the water sample

Serum Estimations	Urinary Estimations	Analysis	
- Calcium - Uric acid - Inorganic phosphate - Total protein - Sodium - Potassium - Creatinine	- Volume - pH - calcium - Uric acid - Inorganic Phosphate - Total proteins - Sodium - Potassium - Oxalate - Creatinine	- Colors - Odor - pH - Conductivity - Total solids - Total Dissolved solids - Suspended solids - Total Hardness (as Calcium carbonate) - Magnesium hardness - Calcium as calcium +1 - Magnesium as Mg + 2	- Chloride - Alkalinity - Sulphate - Nitric and Nitrate - Iron - Phosphate - Silica

Quantitative serum and urinary estimations were made for calcium, uric acid, organic phosphate, sodium, potassium, total protein, oxalate and Creatinine. All the pipette and test tubes were washed with deionised water and dried before use.

RESULTS

At Peshawar and Charsadda risk factors in the upper urinary tract stone disease were studied and we have come up with following results. The age range of our subject was between 01-60 years. The mean age ± S.D of age of stone former for men was 34.6 ± 8.6 years and for female 30.8 ± 6.7 in N.S.F. the age and sex distribution of total 100 cases is given (Table No. 1). The highest incidence of stone disease was in the age group of 16-30 years.

Table No. 1: Total number of patients included in study from both Peshawar and Charsadda 100.

Number of Patients & Location:		
Number of patients from Peshawar	60	
Number of patients from Charsadda	40	
Total number of male patients from both cities	64	
Total number of female patients form both cities	36	
Sex Distribution	Peshawar	Charsadda
Male	40 (40%)	24 (24%)
Female	20 (20%)	16 (16%)
Age Group & Patients in %age	Male	Female
01-15 years	8%	4%
16-30 years	20%	20%
31-45 years	28%	8%
46-60 years	8%	4%

The mean ± S.D of urine volume of 100 Stone Formers (S.F) & Non-stone formers (N.S.F) was 1401 ± 269.6 ml and 1051.7 ± 54 ml respectively. The mean urine volume of S.F was greater than that of N.S.F and statistically it is significant ($P < 0.05$). (Table-2) Mean ± S.D urine volume in stone formers (S.F) and non-stone formers (N.S.F) at Peshawar and Charsadda (n=100).

Table No.2:

Urine Volume (ml)		Significance
S.F	N.S.F	
1401.6 ± 269.6	1051.7 ± 54	The difference is significant ($P < 0.05$)

DISCUSSION

The presents study was conducted to determine the biochemical risk factors urolithiasis in Peshawar and Charsadda. For this purpose Serum & 24 hour's urinary samples were collected from one hundred stone formers and one hundred controls. One hundred samples of drinking water from Peshawar and Charsadda were collected and analyzed to determine the biochemical risk factor involved in urolithiasis due to drinking water. Our study showed positive family history 16 % (maternal 4% and paternal 12%). These studies are interesting because of showing in larger variation. This may be due to the polygenic inheritance for stone

diseases and the gene having originally partial penetrance are attaining near complex penetrance. Similarly, family members with the same food habits have higher incidence compared to others. Urine was analyzed for calcium, uric acid, inorganic phosphates, sodium, potassium total proteins and Creatinine. Besides these, urinary oxalate was also estimated. Urine volume and pH was noted in both stone formers (S.F) and non-stone formers (N.S.F). Low urinary volume has been blamed as one of the risk factors of Urinary stone disease. The present study has also shown negative or positive association between water hardness and urinary stone disease is debatable. Low urine volume has been attributed as a risk factor in the upper urinary tract stone [8, 12, 13]. Urolithiasis has a worldwide distribution ranging from upper urinary tract stone diseases to the lower urinary tract stone diseases. Bladder stone was a common disease about a hundred years ago, but nowadays upper urinary tract stone diseases are common [8, 9]. Upper urinary tract stone diseases have a high incidence in western countries. This high incidence could be due to affluence, rich diet and more sedatory life particularly in the middle age [10]. Bladder stone diseases in children have been extensively studied and it has been shown that in the past few years the incidence has shown a decline. This may be due to the improved socio-economic conditions and living standard and better health facilities for the children including O.R.S supply to the dehydrated children by W.H.O and other U.N organizations like UNICEF. The living conditions in Pakistan improved because of the Pakistanis working in the Middle East[5, 14, 15]. Robertson et al, 1976 reported a high incidence of stone disease with high protein diet intake. This may be a factor of increase incidence of stone diseases in Peshawar and Charsadda because of traditional Tikka Karahi, Chappli Kabab, Roasted meat and Pitta Tikka (hidden barbeque meat). Secondary calculi in the prostatic age group are increasing because of the increased life expectancy in Pakistan [6]. Urinary stones in children are usually genetic and most commonly due to hypercalciuria. Isolated hematuria in children may be caused by hypercalciuria and precede calculus formation [11].

CONCLUSION

Our study on the subject of risk factors in the upper urinary tract stone diseases in Peshawar and Charsadda therefore, it is concluded that:

1. 40% of the patients (male & female) develop upper urinary tract stone diseases between 16-30 years of age. The mean age of stone for men was 34.6 years.
2. Family history of stone diseases is found in 16% of stone formers.
3. The urinary volume/day in S.F. as advised by their physicians, because all cases were known cases or urolithiasis.
4. The urine excretion of sodium/day in both S.F as well as N.S.F was above the normal range of urinary sodium (200 mg/day). The excretion in S.F was greater than N.S.F and statistically significant and it might be a contribution risk factor of urolithiasis.
5. The urinary pH both in N.S.F and S.F were within normal physiological range, therefore the urinary pH cannot be blamed as a risk factor for urolithiasis.
6. Drinking water cannot be blamed as risk factor for urolithiasis in Peshawar and Charsadda, because using same Source of drinking water some people develop urinary stone disease and some other is spared.

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Original Article

Garlic in Diabetes

Antidiabetic Actions of Powdered Plant and Aqueous Extract of Allium Sativum (Garlic) Bulbs in Type-II Diabetic Patients

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ABSTRACT

Objectives: To study hypoglycemic properties ofpowdered plant and aqueous extract of Allium sativum (Garlic) bulbs in type-II diabetics.

Study Design: Experimental human study.

Place and Duration of Study: This study was conducted at the Hamdard Institute of Pharmaceutical Sciences Islamabad and Army Medical College Rawalpindi from ___.

Material and Method: The study was performed on 45 humans, which were divided into 3 groups i.e. Group A, B and C. Group A comprises of 15 patients of type-II diabetes, taking no drugs for diabetes. Group B comprises of 15 patients of Type-II diabetes taking oral hypoglycemic agents with inadequate control of blood sugar levels. Group C was control group, containing 15 healthy volunteers. The study was divided into 2 phases. Initially, after baseline sampling for blood glucose and urinary glucose, all the subjects were given powdered bulbs of Allium sativum orally, at low (20 mg/kg/d), intermediate (30 mg/kg/d) and high (45 mg/kg/d) doses, for 14 days. At day 15, blood and urine sampling was done. After 1 week, all the subjects were administered aqueous extract of Allium sativumbulbs orally, at low (20 mg/kg/d), intermediate (30 mg/kg/d) and high (45 mg/kg/d) doses, for 14 days. At the end, sampling was done again.

Results: Both dry powdered plant and aqueous extract of bulbs of Allium sativum (Garlic) decrease blood and urine glucose levels in type-II diabetics, especially in the groups who were taking oral hypoglycemics and had inadequate control of blood glucose previously.

Conclusion: Allium sativum has significant hypoglycemic activity, particularly in high dose, and can be combined with oral hypoglycemic agents in type-II diabetics.

INTRODUCTION

Plants are an exemplary source of drugs, infact many of the currently available drugs were derived either directly or indirectly from plants. According to world ethnobotanical information report, 800 plants may possess antidabetic properties.[1] For e.g. Galega officinalis is a source plant for metformin, an oral antidabetic drug.[2] Also there is established antidiabetic activity of Eugenia jambolana, Momordica charantiaand Tefairia occidentalis.[3-5]

Allium sativum (Garlic), is a member of the Liliaceae family of plants and it is a common food for flavor and spice.[6] This plant has been used for many years for different medical illnesses. The bulbs and oil are used traditionally. Pharmacological actions of Allium sativum are widespread and it has been demonstrated to have antihyperlipidemic,[6]antihypertensive,[7] wound healing,[8] antidiabetic,[9] anticancer,[10] immunomo-dulator,[11] antihelmintic,[12] and hepatoprotective[13] properties. The present study was designed to study the antidabetic effects of powdered plant and aqueous extract of Allium sativum (Garlic) bulbs in type-II diabetic patients.

MATERIALS AND METHODS

This Experimental study period was 5 weeks. The study was conducted in Hamdard Institute of Pharmaceutical Sciences, Islamabad and Army Medical College, National University of Sciences & Technology, Rawalpindi, Pakistan. This study was approved by ethical committee of Army Medical College.

Plant Material & Preparation of Extract: Allium sativum Linn bulbs were obtained from the local market. Dr. Mir Ajab Khan, department of biological sciences, Quaid-i-Azam University, Islamabad, identified the plant. The bulbs were shade dried, pulverized by a mechanical grinder and passed through 40-mesh sieve. Half of the powdered plant was stored in labelled glass bottles. Other half of the powdered plant was soaked in water, in labelled beakers (100g in 500ml) and kept at room temperature. The slurry was stirred 2 hourly and left overnight. The mixture was then filtered and the filtrate was freed from solvent under partial vacuum (71 mmHg) at 35-45°C to yield pulp. The final residue collected was a thick paste. This was dried at reduced temperature. This dried mass served as aqueous extract for experimentation.[14,15]

Grouping of Subjects: 45 subjects (patients and controls) were medically examined and divided into 3 Groups i.e. Group A, B and C, each containing 15 subjects. Each Group was further subdivided into 3 subgroups.

Inclusion Criteria: The following criteria were used to include the patients in the study:

- Type-II diabetics with fasting plasma glucose level equal to or greater than 140 mg/dl
- Type-II diabetic patients taking oral hypoglycemics, having inadequate control of blood glucose
- Normal healthy subjects
- The patients and control subjects were of either sex between the ages of 35-60 years.

Exclusion Criteria: The following criteria were used to exclude the patients:

- Patients suffering from type-I diabetes.
- Patients with any complication of diabetes.
- Patients with GIT, hepatic, cardiovascular or renal diseases that can interfere with the absorption, metabolism and excretion of the study plant.
- Pregnant or nursing females.
- Smokers.

General Plan of Study: The study was divided into 2 phases i.e. Phase 1 and 2. All the patients and control subjects were monitored for any adverse effects of the plant.

Table No.1: Grouping of Subjects

Groups	Category	Dose of Drug
Group A (n=15) Subgroup A1 (n=5) Subgroup A2 (n=5) Subgroup A3 (n=5)	Patients of Type-II diabetes, taking no drugs for diabetes	A1 = Low Dose (20 mg/kg/d) A2 = Intermediate Dose (30 mg/kg/d) A3 = High Dose (45 mg/kg/d)
Group B (n=15) Subgroup B1 (n=5) Subgroup B2 (n=5) Subgroup B3 (n=5)	Patients of Type-II diabetes taking oral hypoglycemic agents with history of inadequate control of blood glucose	B1 = Low Dose (20 mg/kg/d) B2 = Intermediate Dose (30 mg/kg/d) B3 = High Dose (45 mg/kg/d)
Group C (n=15) Subgroup C1 (n=5) Subgroup C2 (n=5) Subgroup C3 (n=5)	Control group, containing healthy volunteer subjects	C1 = Low Dose (20 mg/kg/d) C2 = Intermediate Dose (30 mg/kg/d) C3 = High Dose (45 mg/kg/d)

Phase 1 (Dry Powder Phase): After baseline sampling, all the subjects were administered dry powdered bulbs of Allium sativum, orally for 14 days. Subgroups A1, B1 & C1 received the drug at low dose (20 mg/kg/d), Subgroups A2, B2 & C2 received the drug at intermediate dose (30 mg/kg/d), while Subgroups A3, B3 & C3 received the drug at high dose (45 mg/kg/d). On day 15, blood and urinary samples of all the subjects were taken.

Phase 2(Aqueous Extract Phase): After an interval of 1 week, fasting blood and urine samples were again taken. Then all the subjects were administered aqueous extract of Allium sativum bulbs, orally for 14 days. Subgroups A1, B1 & C1 received the drug at low dose (20 mg/kg/d), Subgroups A2, B2 & C2 received the drug at intermediate dose (30 mg/kg/d), while Subgroups A3, B3 & C3 received the drug at high dose (45 mg/kg/d). On day 15, blood and urinary samples of all the subjects were taken.

Sampling: All the subjects were requested to come fasting (no food for 12 hours) for blood sampling, and to drink 250ml water before sampling.[16] Patients already taking oral hypoglycemic agents were requested to take their usual medicine and food after sampling.

Blood Sampling: Blood sampling (3-5 ml) was done from each subject by venipuncture, using aseptic technique. The blood samples were collected in clean oven dried test tubes, which were previously rinsed with 1% sodium fluoride and 3% potassium oxalate solution to prevent coagulation and glycolysis. The plasma was separated by centrifugation. Any sample showing hemolysis was discarded. After separation of plasma, it was transferred to glass bottles with plastic caps. The plasma glucose estimation was done on the same day.

Urine Sampling: All the subjects were instructed to void their morning urine in specific bottles, provided to them. The bottles were then sent for urine glucose estimation.

Biochemical & Statistical Analysis: Plasma assay of glucose was done by kit method and urinary glucose was estimated by strip method.[17] The data was analyzed using Microsoft Excel and SPSS-20. P-value of <0.05 was considered statistically significant.[18]

RESULTS

Results of this study showed that there was significant decrease in plasma glucose two weeks after administration of powdered plant and aqueous extract of Allium sativum bulbs. The greatest decrease was with high dose (45 mg/kg/d) of the plant used, and the mean value comes closer to mean value of control group. With low and intermediate doses (20 mg/kg/d and 30 mg/kg/d respectively), the glucose levels were though reduced, but there was no significant difference. Glycosuria disappeared two weeks after administration of high dose of bulbs of Allium sativum while low and intermediate doses did not have any significant effect on glycosuria. The results are summarized in the following tables and graphs:

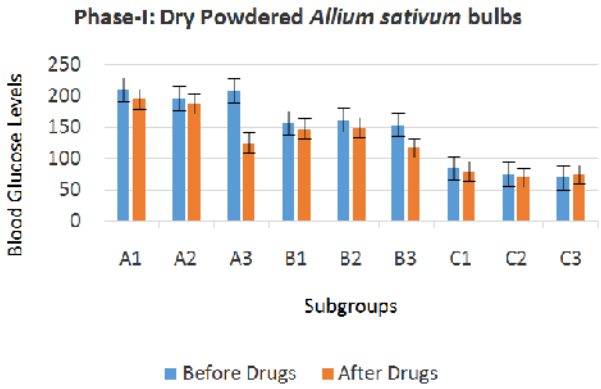
Table 02: Results of dry powdered bulbs of Allium sativum on glucose levels ± S.D.

Phase 1: Dry Powdered bulbs of Allium sativum				
	Blood Glucose (mg/dl)		Urinary Glucose	
	Before Drugs	After Drugs	Before Drugs	After Drugs
Group A: (DM-II patients with no previous medication)				
Subgroup A1: Low dose	210 ±13.2	195 ± 9.0**	+ve	+ve
Subgroup A2: Int. Dose	196 ±12.9	187 ± 8.4**	+ve	+ve
Subgroup A3: High Dose	208 ± 16.0	125 ± 9.8*	+ve	-ve
Group B: (DM-II patients on oral hypoglycemic agents)				
Subgroup B1: Low dose	157 ± 12.1	148 ± 8.8**	-ve	-ve
Subgroup B2: Int. Dose	162 ± 10.3	150 ± 7.9**	-ve	-ve
Subgroup B3: High Dose	154 ± 7.5	117 ± 8.9*	-ve	-ve
Group C: (Control Group)				
Subgroup C1: Low dose	85	80**	-ve	-ve
Subgroup C2: Int. Dose	75	70**	-ve	-ve
Subgroup C3: High Dose	70	75**	-ve	-ve

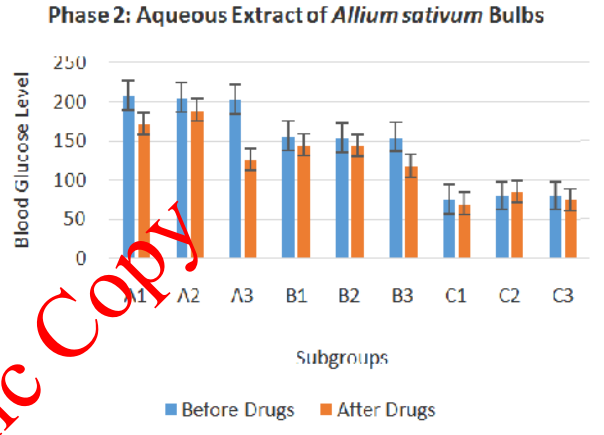
***Significant, **Not-significant, +ve = Glycosuria, -ve = No Glycosuria, Low dose: 20 mg/kg/d, Intermediate dose: 30 mg/kg/d, High dose: 45 mg/kg/d**

Table No.3: Results of aqueous extract of Allium sativum bulbs on glucose levels ± S.D.

Phase 2: Aqueous Extract of Allium sativum				
	Blood glucose (mg/dl)		Urinary Glucose	
	Before Drugs	After Drugs	Before Drugs	After Drugs
Group A: (DM-II patients with no previous medication)				
Subgroup A1: Low dose	209 ± 22.4	172 ± 4.1**	+ve	+ve
Subgroup A2: Int. Dose	206 ± 9.61	190 ± 7.9**	+ve	+ve
Subgroup A3: High Dose	203 ± 20.1	127 ± 12.4*	+ve	-ve
Group B: (DM-II patients on oral hypoglycemic agents)				
Subgroup B1: Low dose	157 ± 7.2	145 ± 4.7**	-ve	-ve
Subgroup B2: Int. Dose	154 ± 10.9	144 ± 7.1**	-ve	-ve
Subgroup B3: High Dose	155 ± 11.5	118 ± 12.8*	-ve	-ve
Group C: (Control Group)				
Subgroup C1: Low dose	75	70**	-ve	-ve
Subgroup C2: Int. Dose	80	85**	-ve	-ve
Subgroup C3: High Dose	80	75**	-ve	-ve



Graph No.1: Effect of dry powdered plant on glucose levels



Graph No.2: Effect of aqueous extract of plant on glucose levels

Untoward Effects: GIT upsets e.g. nausea, vomiting and abdominal discomfort was reported with the administration of high dose of Allium sativum in 2 patients. Mild headache was reported by some patients.

DISCUSSION

This study has demonstrated the hypoglycemic properties of dry powdered and aqueous extract of Allium sativum (Garlic) bulbs. Previously such studies were mostly performed in animals but this study was performed in human model of type-II diabetes mellitus patients. When these drugs were administered to diabetic patients, especially the patients on oral hypoglycemic agents with inadequate control of blood sugar, they showed remarkable decrease in blood & urine glucose levels in comparison to control group.

The results of this study correlates with a study done at University of Karachi, by Ashraf et al. (2011), which has depicted that administration of garlic tablets, along with standard oral hypoglycemic agent i.e. Metformin, to type-II diabetic patients, reduces their blood glucose and lipids levels over the period of 24 weeks.[19] Sher et al. (2012) in another study reveals that garlic extract produced hypoglycemia as well as hypolipidemia in

alloxan induced diabetic rabbits. The hypoglycemic effect was more pronounced with metformin, whereas hypolipidemic effect was more pronounced with garlic.[20]

A review article by Patel et al.(2012) reveals that plants like Allium sativum, Citrullus colocynthis, Trigonella foenum greacum, Gymnema sylvestre, etc. contains active compounds i.e. pedunculagin, strictinin, leucopelargonidin-3-O-alpha-L rhamnoside, epigallo-catechin gallate, roseoside, dehydrotrametenolic acid, beta-pyrazol-1-ylalanine, glycyrrhetinic acid cinchonain Ib, leucocyandin 3-O-beta-d-galactosyl cellobioside, isostrictinin, epicatechin and christinin-A, which show significant insulinomimetic and antidiabetic activity. The antidiabetic activity of medicinal plants is attributed to the presence of terpenoids, flavonoids, polyphenols, coumarins and other constituents which show reduction in blood glucose levels.[21]

Another proposed hypoglycemic mechanism of action of Allium sativum is that, it contains disulfides such as allicin (siallyldisulphide oxide) and allyiprpyldis allylpropyldisulhide, which by virtue of their thiol groups act as sparing agents for insulin. [22]

CONCLUSION

Dried powdered plant and aqueous extract of Allium sativum bulbs can be combined with oral hypoglycemic agents to bring the blood glucose to normal levels in patients whose blood glucose levels are not controlled with these agents or in those patients in whom these drugs produce adverse effects on dose increment.

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Original Article

Gestational Diabetes

Gestational Diabetes in Patients with Obesity

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ABSTRACT

Objective: To determine the frequency of Gestational Diabetes in obese patients.
Study Design: Cross sectional study
Place and Duration of Study: This study was carried out at Obstetrics and Gynaecology Department, Shahina Jamil Hospital, Abbottabad from April 2013 to September 2013.
Materials and Methods: Total 111 patients were included in this study. After an overnight fast (8 hrs) fasting plasma glucose was taken. 75 gm glucose in one glass of water was given to patient. After 2 hours, another plasma glucose test was taken. Gestational Diabetes was diagnosed on basis of fasting plasma glucose level of > 126 mg / dl, 2 hours post-prandial plasma glucose level of more than 199.8 mg / dl.
Results: Mean age of patients was 27.7 + 3.3. Gestational Diabetes was found in 21 patients (19.0%). Mean Body Mass Index (BMI) of patients was 30.80 + 0.44. 24 patients (21.6%) were primigravida and 87 patients (78.4%) were multigravida.
Conclusion: The results of present study indicate that obesity is an independent risk factor for adverse obstetric outcome and is significantly associated with an increased gestational diabetes rate.
Key Words: Gestational Diabetes Mellitus, Obesity, Body Mass Index (BMI).

INTRODUCTION

Obesity is a common disorder which has become prevalent in whole world over the past 10 years[1]. Body Mass Index (BMI) is the most widely accepted measure of obesity in adults[2]. BMI of more than 30 kg / m^2 is considered as obesity[3]. It is well recognized that maternal obesity is associated with an increased risk of maternal, peripartum and neonatal complications[4]. Obesity increases th risk of gestational Diabetes, pre-eclampsia, macrosomia and caesarean delivery[5]. Gestational Diabetes mellitus is defined by American Diabetes Association as any degree of glucose intolerance with onset or first recognition during pregnancy[6]. The association of obesity, insulin resistance, glucose intolerance, hypertension, characteristic dyslipidemia is called Metabolic Syndrome. All of the features of Metabolic Syndrome are closely related to elevated BMI[7].

Overweight is a risk factor for impairment of carbohydrate tolerance in non-pregnant state and during pregnancy. Fasting and post-absorptive plasma insulin concentrations are higher in obese pregnant women than in non-obese pregnant women. Weight excess clearly increases the risk of overt impairment of carbohydrate tolerance in pregnant women. Even in moderately over weight subjects (BMI 25-30) or weight 120-150 % of ideal body weight) the incidence of gestational diabetes is 1.8 to 6.5 times greater than that in normal weight subjects[8]. Gestational Diabetes is found in 17 % of women with obesity, in a study conducted in obesity unit, Hudding University Hospital, Sweden[9]. Findings of Chu et al also indicate that high maternal weight is associated with a substantially high risk of Gestational Diabetes Mellitus[10].

There is a strong correlation between obesity and gestational diabetes mellitus, therefore, it is pertinent to identify women at risk of developing gestational diabetes in relation with elevated BMI as gestational diabetes mellitus increases the risk of hypertensive disorders, chromosomal defects, macrosomia, caesarean delivery and high risk of developing type 2 diabetes mellitus.

The aim of the study was to determine the frequency of gestational diabetes in obese pregnant females to help in early diagnosis of gestational diabetes and its management to prevent maternal and fetal complications.

MATERIALS AND METHODS

Study was carried out at Obstetrics and Gynaecology Department, Shahina Jamil Hospital Abbottabad from April 2013 to September 2013. Sample size was calculated using formula taking 5 % margin of error and 95 % confidence level. Anticipated population proportion is 17 % of gestational diabetes mellitus[9]. Thus sample size was of 111 patients. Inclusion criteria were women with singleton pregnancy with BMI of > 30 kg/m^2 between 24 weeks to 34 weeks of gestation. Exclusion criteria was pre-existing diabetes, multiple pregnancy, hypertension and any other medical disorder.

Subjects were selected from pregnant ladies visiting antenatal clinic fulfilling the inclusion criteria in the department of Obstetrics and Gynaecology, Shahina Jamil Hospital, Abbottabad. They were informed about

risks and benefits of the study and informed consent was taken on Proforma. They were included in the study with permission of Ethical Committee of the institution. Patients with pre-existing diabetes were excluded from the study.

To diagnose gestational diabetes, history regarding her personal data, symptomatology was taken. Examination was performed. Patients were referred for oral glucose tolerance test to central laboratory Shahina Jamil Hospital, Abbottabad. OGTT was performed between 24 weeks to 34 weeks of gestation according to WHO criteria. After an overnight fast(8 hours) fasting plasma glucose was taken. 75 gram glucose in one glass of water was given to patient. After 2 hours, another plasma glucose test was taken. Gestational diabetes was diagnosed on basis of fasting plasma glucose level of >126 mg/dl, 2 hours post prandial plasma glucose level of > 199.8 mg/dl . all information was recorded in a specifically designed proforma.

Data was analysed by using statistical package for social science (SPSS) version 10. Descriptive statistics was applied to analyse the data. Mean and standard deviation was calculated for age and BMI. Frequencies and percentages were calculated for presence of gestational diabetes in obese. Data was in tabular form. Effect modifiers were controlled through stratification of age, BMI, parity and gestational age to see the effect on outcome.

RESULTS

Total 111 patients were included in this study carried out over a period of 6 months from April 2013 to September 2013 in the department of obstetrics and gynaecology Shahina Jamil Hospital Abbottabad.

Distribution of cases by age shows. 36 patients (32.4%) were 20-25 years of age, 53 patients (47.7%) were 26-30 years and 22 patients (19.9%) were 31-35 years old with mean age of 27.7±3.3 (Table 1)

Table No 1: Distribution of cases by age

Age (years)	Number	Percentage
20-25	36	32.4
26-30	53	47.7
31-35	22	19.9
Total	**111**	**100.0**
Mean ± S.D	**27.7±3.3**	

Table No 2: Distribution of cases by gestational age

Gestational Age (years)	Number	Percentage
24-30	99	89.1
31-34	12	10.9
Total	**111**	**100.0**
Mean±S.D	**27.8±2.3**	

There were 99 patients (89.1%) belonging to gestational age of 24-30 weeks while remaining 12 patients (10.9%) were between 31-34 weeks of gestational age. Mean gestational age was observed 27.8±2.3 weeks (Table 2).

Out of 111 cases 24 patients (21.6%) were primigravida and 87 patients (78.4%) were multi gravida (table 3). Gestational diabetes was found in 21 patients (19.0%) (Table4). Mean BMI of patients was 30.80±0.44.

Table No 3: Distribution of parity

Parity	Number	Percentage
Primigravida	24	21.6
Multigravida	87	78.4
Total	**111**	**100.0**

Table No 4: Frequency of gestational diabetes

Gestational Diabetes	Number	Percentage
Yes	21	19.0
No	90	81.0
Total	**111**	**100.0**

DISCUSSION

Obesity is a global health problem that is increasing in prevalence. The WHO characterizes obesity as a pandemic issue with prevalence in females than males. Obesity during pregnancy is considered a high risk state because it is associated with many complications[11]. Obesity has implications for all aspects of maternal/foetal health and outcome during pregnancy with short and long term ramifications[12].

Obesity is an established risk factor for gestational diabetes. It is known whether this risk might be reduced through weight loss between pregnancies. We sought to determine whether weight loss during pregnancies reduced the risk of gestational diabetes among obese women[13]. In current study gestational diabetes was developed in 19% of obese women.

In a study conducted by Glazer et al, 32% of women lost weight between pregnancies, with a mean weight loss of 23 lbs. Women who lost at least 10 lbs.between pregnancies had a decreases risk of gestational diabetes relative to women whose weight changes by less than 10 lbs. (relative risk = 0.63; 95% confidence interval = 0.38-1.02, adjusted for age and weight gain during each pregnancy). Of 61% of women who gained weight between pregnancies, the mean weight gained was 22 lbs. Women who gained atleast 10 lbs. had an increased risk of gestational diabetes[14].

Based on meta-analysis of the literature, it is estimated that the risk of developing GDM is about two, four and eight times higher among overweight, obese and severely obese women, respectively, compared with normal weight pregnant women. The public health implications for the U.S are significant because of the high prevalence of GDM, and the potential adverse consequences associated with obesity and GDM, including higher risk of adverse infant outcomes, higher

risk of diabetes for the mother later in life, and a higher risk of diabetes and overweight for the offspring[15].

Thorpe and Howard suggest that GDM risk increases substantially with increasing maternal BMI. The increasing prevalence of obesity and related conditions such as GDM and type 2diabetes are already changing predictions of the cost of medical care in the future[16].

Foetal macrosomia is a common adverse infant outcome related to GDM, especially if GDM is unrecognized and untreated[17]. For the infant, macrosomia increases the risk of shoulder dystocia, clavicle fractures, and brachial plexus injury and is also associated with depressed 5-min Apgar scores and increased rates of admission to neonatal intensive care unit. For the mother macrosomia is an increased risk of caesarean delivery; these mothers also have an increased risk of postpartum haemorrhage and vaginal lacerations[18].

Maternal obesity is associated with an increased risk of diabetes, both pre gestational diabetes and GDM[19]. Compared with normal weight women (BMI<25kg/m2), a recent meta-analysis of 20 studies demonstrated that the OR of developing GDM was 2.14 (95% CI, 1.82-2.53), 3.56 (95% CI, 3.05-4.21), and 8.56 (95% CI, 5.07-16.04) among overweight (BMI 25-30kg/m2), obese (BMI>30kg/m2), and severely obese women (BMI>40kg/m2) respectively[20].

A recent study found that weight gain in the 5 years prior to becoming pregnant, even at a rate of 1.1 to 2.2kg per year, increases the risk of developing GDM, and that this was especially true for women who were not initially overweight[21].

In addition to pre pregnancy BMI, a number of other demographic factors affect the incidence of GDM. Hedderson and colleagues found that GDM was more likely in women who were older than 35 years of age and who were of Hispanic or Asian ethnicity[22].

Majority of the above mentioned studies support findings of present study.

CONCLUSION

The results of present study indicate that obesity is an independent risk factor for adverse obstetric outcome and is significantly associated with an increased gestational diabetes rate.

Even moderate changes in pre pregnancy weight can apparently affect the risk of gestational diabetes among obese women. This may offer further motivation for interventions aimed at reducing obesity among women of reproductive age.

Preventing GDM depends on preventing obesity in young women; preventing type 2diabetes in obese women who have GDM depends on effective nutrition and physical activity interventions that produce weight loss. These and other prevention strategies, aimed at both individual and societal levels, are needed to control the growing epidemic of diabetes.

Over weight and obesity should be controlled before, during and after pregnancy by observing following factors.

1. Carbohydrates rich diet should be avoided
2. Fatty diet should be avoided
3. Daily routine work of home should not be avoided
4. Daily walk should not be avoided before and during pregnancy

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Original Article

Burns

Epidemiology and Mortality of Burns in Karachi

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ABSTRACT

Objective: Despite being a serious hazard the causal factors and outcomes of burn injuries in Karachi remain an under researched area. The purpose of our study was to analyse the epidemiology and mortality of burn injury cases in Karachi in order to create awareness at mass level.

Study Design: Prospective Observational Study.

Place and Duration of Study: This study was carried out from October 30th, 2013 to April 30th, 2014 in the Burns Centre, Civil Hospital Karachi.

Materials and Methods: The study encompassed all the burn injury cases (expired or alive) reported to the Civil Hospital during the six months of the study period. The demographic information, cause and level of injury of all the reported cases were documented.

Results: 784 cases of thermal injuries were reported. Out of these, 441(56.25%) were males and 343(43.75%) were females. Most of the burn victims (60%) belonged to the age group of 15 – 44 years. Out of 784 cases, 565 cases (72%) were of serious dermo-epidermal and deep burns. The overall burn mortality rate was found to be 55.9%. This included burn victims who were brought dead or expired during treatment. Maximum burns were a result of fire/flame (48.1%).

Conclusions: The mortality rate of burn injuries in Karachi is alarming as compared to the international statistics. Fire incidents are the main cause of these injuries. Fatal burns can be prevented if necessary precautions are taken.

Key Words: Burns, thermal injury, epidemiology, mortality, Karachi.

INTRODUCTION

Burns are abysmal and agonizing injuries that either result in fatality or inflict lifetime physical, emotional[1] & psychological wounds to the survivors and their families. In comparison to other treatments, burn injury treatment requires a lot more resources, making it a key economic burden. Burn injury is undeniably a serious public health concern around the globe. Karachi is one of the largest and densely populated cities of Pakistan. Numerous cases of thermal injuries and burns are reported here on daily basis. In the last decade, there has been a rising trend in burn injury patients. In order to control and prevent these injuries, a thorough understanding of burns and their epidemiology is needed.

Burn or thermal injury is characterized as damage to the tissue caused by exposure of inner or outer body surfaces to heat leading to capillary impairment, fluid exudation, necrosis of injured tissue and trauma[3]. These injuriesinclude simple burns, scalds, chemical burns[4], electric burns and radiation burns. Thermal injuries can have varied impacts ranging from minor to major depending upon the temperature & time period of exposure, degree & location of burns, and patient age[3]. The effects of burns are classified into discrete zones namely coagulation, stasis, and hyperaemia[5].For evaluation of burn severity level, burns are categorized into different classes (Table No. 1).

Size of the burn in adults is typically evaluated by assessing percentage of patient's body area having burns of partial and full thickness[10]. For this purpose *rule of nines* is used. "9% is for head and each arm, 18% for front or back of trunk, 9% for front or back of each leg, and 1% for perineum thus making a total of 100%."[3] Thermal injuries that cover more than 20% of TBSA (total body surface area) are termed as major burns[11].

Thermal injuries are one of the most complicated and challenging injuries. A moderate burn can turn into a fatal injury due to negligence. Infection is considered to be the greatest challenge in burn treatment.[12] Skin, acting as a natural barrier against micro-organisms colonization gets damaged giving an open entry to various infections and sepsis[13] thus posing a high risk of infections in patients with burn injuries.[14, 15] This further results in increased complications[16] especially among children.[17] Some studies have found infections[18] and sepsis[19]as the most prevalent causes of mortality in burn injury patients.

All the burns cases are medicolegal cases. Despite being a serious hazard the causal factors and outcomes of burn injuries in Karachi remain an under researched area. The purpose of our study was to analyse the epidemiology and mortality of burn injury cases in Karachi in order to create awareness at mass level.

Table No. 1: Classification of Burns

Categories of Burns	Degree of Burns	Description of Burns	Appearance of Burns	Healing Time	Result
Epidermal	First- degree (Superficial) burns	Only involves epidermis. Very painful	Red and dry. Typically a blister is formed.	Self-healing. 5-10 days	No Scar
Dermo-epidermal	Superficial Second-degree (Superficial Partial Thickness) burns	Involves epidermis and portion of underlying dermis. Painful	Wet, erythematous skin. Clear blisters. Blanch if touched.	2 weeks	Usually no scar
	Deep Second-degree (Deep Partial Thickness) burns	Involves reticular dermis. Painful	White blisters. Do not blanch	Minimum 3 weeks	Scar often contracts resulting in deformity and function impairment
Deep	Third- degree (Full Thickness) burns	Severe damage to all skin layers. Nerve endings get damaged. Burns are fairly painless.	Dark brown, grey or black with a leathery texture		Mostly need skin grafting. May result in contractures and function loss.
	Fourth- degree burns	Completely burnt skin layers. Affects muscles, tendons & bones. Painless burns			

MATERIALS AND METHODS

This prospective observational study was performed in the Burns Centre, Civil Hospital Karachi (CHK). It is a public sector hospital and one of the leading burn units of the country. The Burns Centre CHK offers 24/7 emergency on call Burn Care service. This study was performed during a period of six months starting from October 30th, 2013 to April 30th, 2014.

In this study, all the thermal injury cases brought to the hospital (expired or alive) were included. 784 cases of burns were reported during our study period. Their demographic data, cause and degree of burns and the final outcomes after treatment were recorded. To conduct this study, formal approval was taken from the hospital authorities. Patients or their relatives were also taken into confidence and were ensured that confidentiality of their personal information will be maintained.

RESULTS

Our findings showed that out of a sample of 784 cases, males were 441 (56.25%) and females were 343 (43.75%) (Fig. No. 1 & Table No. 2). For convenience, the patients were divided into four age groups.

Majority of the burn cases (60%) were reported among the age group 15-44 years, 18.4% were among age group of 0-14 years, 125 cases (16%) belonged to the age group 45-64 years while 44 (5.6%) were from the age group > 65 as shown in Fig. No.2 & Table No. 2.

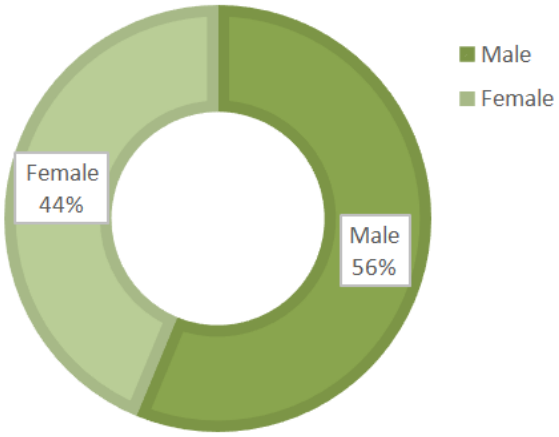

Figure No.1: Burn Injuries on Gender basis

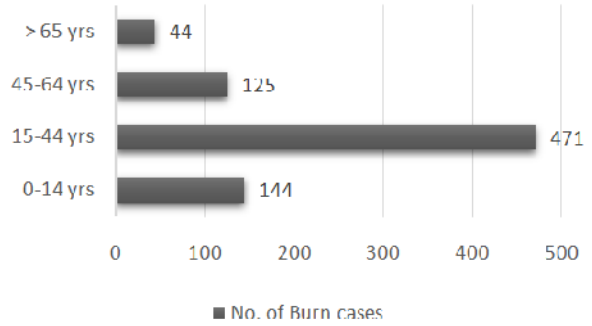

Figure No. 2: Age distribution of Burn Cases

Table No. 2: Distribution of Burn cases according to demographic factors (N=784)

Sr. No	Factors		No. of Reported Cases	%age
1.	Gender	Male	441	56.25
		Female	343	43.75
2.	Age	0-14 yrs	144	18.40
		15-44 yrs	471	60.00
		45-64 yrs	125	16.00
		>65 yrs	44	5.60

The burns categorisation on basis of depth showed that 14% had epidermal burns, the burns which are minor & get healed if protected from infection, 47% had dermo-epidermal burns, which varied from moderate to serious burns and 39% had deep burns (Table No. 3).

Table No. 3: Distribution According to Classes of Burns

Sr. No	Categories of Burns	No. of Cases	%age
1.	Epidermal Burns	110	14
2.	Dermo-epidermal Burns	368	47
3.	Deep Burns	306	39
	Total	784	100

The distribution of thermal injury cases according to the %age of burnt total body surface area (TBSA) is shown in Fig. No.3. In 160 cases burnt surface area ranged from 0-10 %, in 105 patients 11-20 %. Majority of the burn cases had 41-60% of burnt TBSA.

Investigation regarding causes of burns revealed that 48.1% of the burn injuries were a result of fire or flame. 33% of injuries were caused be hot liquids. 75 patients (9.6%) got burns from exposure to chemicals and burns in 73 cases (9.3%) were caused by different means including electric shock, radiations etc. (Table No. 4)

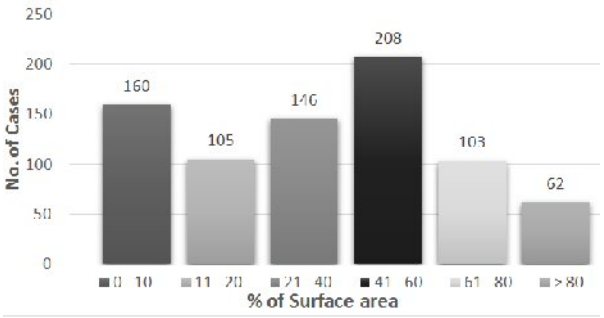

Figure No.3: Distribution of Burns according to TBSA

Table No. 4: Distribution of Causes of Burn Injuries

Sr. No	Causes of Burns	No. of Cases	%age
1.	Fire/ flame	377	48.10
2.	Hot liquids	259	33.00
3.	Chemicals	75	9.60
4.	Others	73	9.30
	Total	784	100.00

The mortality rate of burns in Karachi was 55.9% where 15.2% (n= 119) of the victims expired before they could reach the hospital while 40.7% (n= 319) of the burn victims died during or after the treatment (Table No. 5).

Table No. 5: Mortality & Survival rate in Burn Injuries (N= 784)

Sr. No			No. of cases	%age
1.	Alive		346	44.1
2.	Dead	Brought dead	119	15.2
		Expired during/after treatment	319	40.7
Total			784	100.00

After documenting the results, they were closely analysed and their relation with the mortality rate was determined. Table No. 6 shows that death rate was significantly higher among female victims (70%) as compared to males. Age group of 15 – 44 years experienced majority of deaths (68%) from burn injuries while deep burns proved to be most fatal with a rate of 86%. Victims with 81% or more burnt TBSA had no chance of survival. Most of the deaths occurred from fire (69%).

Table No. 6: Findings & their relation with Burn Mortality

Sr. No	No. of Cases	Alive	Dead	Total
		346	438	784
1.	**Gender**			
	Male	243(55%)	198 (45%)	441
	Female	103(30%)	240 (70%)	343
2.	**Age (years)**			
	0 – 14	90(42.5%)	54 (37.5%)	144
	15 – 44	149(32%)	322 (68%)	471
	45 – 64	84(67%)	41 (33%)	125
	> 65	23(52%)	21 (48%)	44
3.	**Classes of Burns**			
	Epidermal	103(93.6%)	7 (6.4%)	110
	Dermo-epidermal	201(55%)	167 (45%)	368
	Deep	42(14%)	264 (86%)	306
4.	**%age of TBSA**			
	0 – 10	141(88%)	19 (12%)	160
	11 – 20	78(74%)	27 (26%)	105
	21 – 40	86(59%)	60 (41%)	146
	41 – 60	37(18%)	171 (82%)	208
	61 – 80	4(4%)	99 (96%)	103
	> 81	-	62 (100%)	62
4.	**Causes of Burns**			
	Fire/flame	118(31%)	259 (69%)	377
	Hot Liquids	123(47.5%)	136 (52.5%)	259
	Chemicals	52(69.4%)	23 (30.6%)	75
	Others	53(73%)	20 (27%)	73

DISCUSSION

The results of this study show that ratio of male burn victims was relatively same as that of female victims. This is because both males & females are equally vulnerable to thermal injuries inside their homes as well as in the outer world. Fire eruption in houses, markets, factories, warehouses, trains, road accidents, explosions in vehicles, acts of violence, rivalry, etc are common causes of thermal injuries. Fire was found to be the main cause of thermal injuries. This finding is consistent with other studies[20, 21]. Burns from firecrackers and handling of firework and other explosive materials[22] is a problematic issue being very common in Pakistan. Second most common cause of burn injuries is hot liquids. Scalding from hot liquids can be fatal[23]. It is a common health hazard in every house. In most cases, children become victim to these burns in kitchens during meal preparation. Chemicals were also identified as one of the factors causing burns. In addition to people being exposed to chemicals at work stations and factories[24], females in Karachi often become a victim of acid attack in public. This mostly happens as a result of family rivalry or other social factors. Acid is commonly thrown on face of the victim. Injuries from these chemical attacks cause damage to a great extent and in majority of cases the skin becomes irreparable.

The mortality rate associated with burn victims in Karachi was also assessed and was found to be 55.9%. Different researches suggest that throughout the world, thermal injuries contribute to approximately 5% of overall mortality[25]. A study from Pakistan shows a mortality rate of 29.7% in burn cases[26]. Considering these rates, the result of our study is alarmingly high. There can be multiple reasons behind the high mortality rates. It is important to keep in mind that mortality in burn patients depends on multiple factors including cause of burn, TBSA, degree of burn and health care facilities[19]In the past year, Karachi has seen a lot of fire accidents affecting people at mass level, especially in factories, trains, and houses. The incidences of fire increase in winter season due to sheer negligence of people. Load shedding of sui gas is done in winter season all across Pakistan including Karachi. During load shedding or low pressure of sui gas, people forget to check their gas ovens and stoves. Hence leakage of gas occurs resulting in fire explosion. Other than gas stoves, use of kerosene stoves[27] can be fatal resulting in severe burn injuries. Use of these stoves is very common among the lower socio-economic classes of Karachi. Young girls are found to be the prime victims of third and fourth degree burns from these explosions.

Faulty wiring and short circuiting is another common cause of fire in markets and homes. Excessive use of inferior quality CNG cylinders in automobiles pose a massive hazard to the society. These vehicles tend to catch fire quickly endangering the lives of passengers as well as the nearby pedestrians. Burn injuries in all these accidents are mostly fatal involving deep and wide area burns.Mass level fires in slums of Karachi is

also a major contributing factor towards the mortality rate.

An important aspect of this study was to relate the findings with the burn injury mortality rate and identify the most susceptible areas and segments of the society. It was found that the mortality rate of females in thermal injury patients was higher than that of males. There are several socio-economic reasons behind this finding. Some of the common reasons have already been discussed. Moreover, suicidal burning and homicidal burning are two key factors behind high female mortality from burn injuries. Because of innumerable factors, women commit suicide by setting themselves on fire. Women also become a victim of domestic violence followed bythermal injuries[28] that can be fatal.Homicidal burning of women is also very common in Karachi but unfortunately the cases remain unreported as these incidents are regarded as domestic accidents resulting from stove explosions.

CONCLUSION

Burn injuries are very traumatic and have long-term adverse effects on the victim's life. These injuries are excruciating followed by a costly treatment. Unfortunately, burn injuries are common in Karachi with a high mortality rate. These injuries can be fatal. Treatment of these injuries require a lot of time, care and expertise. Measures need to be taken to curtail incidences resulting in thermal injuries. It has been observed that the mortalNility rate of thermal injuries can be lowered by adopting preventive measures. Despite being deadly, burn injuries are preventable. This study attempts to create awareness among the masses regarding the seriousness of burn injuries and the common causal factors associated with them. Concerned authorities should also take measures and enhance the quality of health and safety facilities provided to the people.

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Original Article

MRSA

Prevalence of Methicillin-Resistant Staphylococcus Aureus (MRSA) in Intensive Care Unit of CPEIC, Multan

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ABSTRACT

Objective: We undertook a study to determine the prevalence of MRSA colonization on admission to our intensive care unit (ICU) and the incidence of MRSA colonization in the ICU.

Study Design: Case series study.

Place and Duration of Study: This study was conducted in ICUs in Chaudhry Pervaiz Ellahi Institute of Cardiology, Multan from January 2012, to December 2012.

Materials and Methods: we included 1230 patients in which 766 were CABG and remaining 464 were for some congenital heart disesas .All patients were screened within 24 hours after ICU admission. For the intact skin specimen, a single swab was used to sample 4 different sites (the axilla and groin on both sides). Sternotomywound were sampled also. Pre-moistened swabs were used to collect nasal and skin samples.Swabs were plated on Chapman agar alone.Data were analysed by using spss 11. Descriptive analysis were done along with p value.

Results: There were 1230 admissions to the ICU during the study. MRSA was isolated from 80 (6.8%) of 1,185 admission swabs taken, from 42 (7%) of 596 admission swabs where patients had both admission and discharge swabs taken, and from the discharge swabs of 63 (11.4%) of 554 remaining patients who had negative admission swabs.

Conclusion: This study confirmed that there is a significant rate of acquisition of MRSA in our ICU. It also raised concerns about trauma patients being at increased risk compared with other patients. We are in the process of conducting a cohort study to assess risk factors for the acquisition of MRSA among trauma patients.

Key Word: MRSA, ICU, Anaesthesia.

INTRODUCTION

GLobally Infections with methicillin-resistant staphylococci (MRSA) remain a major concern And incidence of hospital acquired methicillin-resistant *Staphylococcusaureus*(MRSA) continues to rise.[1–4]

Methicillin-resistant Staphylococcus aureus (MRSA) was first identified in 1961 and currently accounts for up to 50% of all nosocomial infections in the USA. Strain typing can be useful to monitor spread of infection and response to treatment. MRSA carry a mec-A gene encoding low-affinity bacterial cell wall penicillin-binding proteins with reduced affinity for β-lactam. Some strains produce an enterotoxin leading to toxic shock syndrome.

MRSA is a common cause of nosocomial infection`in burns patients, probably due in part to a combination of the open wounds and relative immunosuppression, and also indiscriminant use of quinolone antibiotics and ciprofloxacin. There is a high incidence of environmental contamination in burns units; close proximity to infected patients and inadequate hand washing by healthcare personnel are other risk factors for spread.

Around one-quarter of Staphylococcus aureus wound swabs in burns patients grow MRSA.

Burn wound colonization may lead to loss of skin grafts and systemic sepsis. Burns patients should be screened and barrier-nursed.

There are several modes of transmission for MRSA, including transient colonisation of hospital staff and contact with heavily contaminated patients. Following Factors contribute to transmission of MRSA

1. prolonged hospital stay
2. use of several broad spectrum antimicrobial agents

National Guidelines for controlling MRSA were published in 1998 & Attempts to control this spread have relied principally on three measures: hand hygiene among healthcare workers, restriction of antibiotics, and the detection and isolation of infected or colonized patients, which is central to most national guidelines

Understanding the extent of the MRSA problem is central to designing effective control measures. We therefore undertook a study to determine the prevalence of MRSA colonization on admission to our intensive care unit (ICU) and the incidence of MRSA colonization in the ICU.

MATERIALS AND METHODS

The study was conducted from January 2012, to December 2012, in ICUs in ChaudhryPervaizEllahi Institute Of Cardiology. We have 2 surgical ICUs one

with 8 beds and other with 11 beds and an isolation. Here we admit the patient for any major cardiac procedures. After operation pt remains in icu for at least 3 days. we included 1230 patients in which 766 were CABG and remaining 464 were for some congenital heart disesas .

Infection-control practice includes hygienic hand disinfection for all persons entering and leaving ICU and after each patient contact. Basins and alcohol-based preparations (chlorhexidinegluconate in isopropyl alcohol, and ethyl alcohol gel) are widely available. The floor, work surfaces, equipment and curtain rail by each bed are cleaned daily.

All patients were screened within 24 hours after ICU admission. For the intact skin specimen, a single swab was used to sample 4 different sites (the axilla and groin on both sides). Sternotomywound were sampled also. Pre-moistened swabs were used to collect nasal and skin samples.

Swabs were plated on Chapman agar alone. 23

We recorded demographic characteristics (age and sex), previous or current hospital stays (including length of stay), history of surgery or antimicrobial therapy, date of hospital admission, date of ICU admission, severity at ICU admission ,presence at ICU admission of breaks in the skin, and history of invasive procedures.

Data were recorded prospectively on a standardized form.

Data were analysed by using spss 11. Descriptive analysis were done along with p value.

RESULTS

There were 1230 admissions to the ICU during the study. The mean age of the study patients was 57 years (range, 12 to 97 years) and 887 were male. The mean length of stay (LOS) in the ICU was 5.3 days (median, 3 days; range, < 2 to 15 days) and the mean LOS in the hospital prior to admission to the ICU was 6 days (median, < 1 day; range, < 1 to 224 days). A total of 1230 of 1,662 patients had an admission swab taken and 596 of 1,662 patients had both admission and discharge swabs.

MRSA was isolated from 80 (6.8%) of 1,185 admission swabs taken, from 42 (7%) of 596 admission swabs where patients had both admission and discharge swabs taken, and from the discharge swabs of 63 (11.4%) of 554 remaining patients who had negative admission swabs.

DISCUSSION

Hospital-acquired infections—a fifth of which are caused by meticillin-resistant Staphylococcus aureus (MRSA)—are estimated to cost the UK National Health Service (NHS) £1 billion per year.[7] The incidence of MRSA is especially high within intensive-care units, with one in six patients in English units being colonised, infected, or both.[11] National guidelines for preventing the spread of MRSA recommend contact precautions and isolation of infected or colonised patients in a single room or cohort—ie, grouping them geographically with designated staff, though without the benefit of a physical barrier.[14-17] Although workers on several reports have suggested a benefit from single-room isolation or cohort nursing, in a systematic review no well-designed studies were noted that allowed the role of isolation measures alone to be assessed.[19,24]

Table No.1: Comparison regarding age groups, gender, length of ICU stay and type of surgery

Demographic characteristics		Only one swab taken – on admission	Two swabs taken at admission and at discharge	total
Age group,(y)	< 10 yrs	30 (2.43%)	22 (1.78%)	52 (4.22%)
	11-20	13 (1.05%)	30 (2.43%)	43 (3.49%)
	21-30	20 (1.62%)	15 (1.21%)	35 (2.84%)
	31-40	43 (3.49%)	20 (1.62%)	63 (5.12%)
	41-50	25 (2.03%)	30 (2.43%)	55 (4.47%)
	51-60	345 (28.05%)	255 (20.73%)	600 (48.78%)
	>61	100 (8.13%)	72 (5.85%)	172 (13.98%)
Gender	Male	540 (43.9%)	170 (13.82%)	710 (57.72%)
	Female	220 (17.89%)	300 (24.32%)	520 (42.28%)
Length of ICU Stay,(d)	< 1	15 (1.21%)	26 (2.11%)	41(3.33%)
	2-3	321 (26.09%)	419 (34.07%)	740 (60.16%)
	3-4	100 (8.13%)	199 (16.17%)	299 (24.31%)
	5-6	22 (1.78)	88 (7.15%)	110 (8.94%)
	>7	0	55 (4.47%)	55 (4.47%)
Type of surgery	CABG	266 (21.63%)	500 (40.65%)	766 (62.28%)
	Congenital Heart defects	160 (13.01%)	304 (24.72%)	464 (37.72%)

In this study, 11.4% of patients admitted to the ICU acquired MRSA. The strongest risk factor was LOS in the ICU, but certain units also had a higher risk, even after adjusting for LOS. Some of the patients (6.8%) were already colonized with MRSA at admission to the ICU, with prior LOS in the hospital being a significant risk factor.

Others have reported similar rates of MRSA colonization at admission to the ICU, but a lower incidence of new colonizations in the ICU. [25,26] Due to differences in methodology and reporting between studies, it is difficult to directly compare results.[22]

However, there were no substantial differences in age, gender, or LOS in the ICU between patients who had both admission and discharge swabs taken and those who had only one swab taken. There were some minor differences in the other studies under which they were admitted, probably because of differences in staff compliance with the swabbing protocol of the study in the different areas of the ICU. Given the similarities between the two groups, it seems reasonable to suppose that those patients swabbed on admission and discharge are representative of patients screened at least once regarding risk of infection in the context of an adjusted analysis of risk factors.[18-20]

Cardiac surgery patients at our institution received vancomycin and rifampin as preoperative prophylaxis because of a high rate of infection of sternal wounds with MRSA. It may be that the overall burden of MRSA was decreased in the cardiothoracic surgery ward by reducing MRSA infections, which may explain why these patients did not have a lower risk of acquisition of MRSA in the ICU. It may also be that this study did not have adequate power to detect a reduced risk for acquisition among cardiothoracic patients in the ICU.

Risk factors associated with MRSA carriage

- Age older than 60 years
- history of hospitalization or
- surgery

CONCLUSION

This study confirmed that there is a significant rate of acquisition of MRSA in our ICU. It also raised concerns about trauma patients being at increased risk compared with other patients. We are in the process of conducting a cohort study to assess risk factors for the acquisition of MRSA among trauma patients.

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Original Article

Renal Failure

Causes of Acute Renal Failure in Nishtar Hospital Multan

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ABSTRACT

Objective: To identify the common causes of Acute Renal Failure (ARF) in Nishtar Hospital Multan

Study Design: Prospective observational study

Place and Duration of study: This study was conducted at Medical Wards, Nishtar Hospital Multan from September 2012 to March 2013.

Materials and Methods: One hundred and thirty six (136) patients presented with Acute Renal Failure to Nishtar Hospital of ages 15 and above.

Results: Fifty three patients (39%) were males and 83(61%)were females. Mean age of patients was 40.43±18.56 years. Our study showed that common causes of ARF were diarrhea with or without vomiting (22%), septicemia (22%), obstetric causes like septic abortion and APH/PPH (19.11%),obstructive uropathy (11%), hair dye ingestion (9.6%), glomerulonephritis (7.35%), nephrotoxins (5.9%), hemolysis (4.4%) and cardiac failure (3.7%).

Conclusion: Diarrhea with/without vomiting,sepsis, post-partum and ante-partum hemorrhage, septic abortion, obstructive uropathy, hair dye, glomerulonephritis, nephrotoxic drugs, hemolysis and cardiac failureare the common causes of acute renalfailure in our setup.ARFis associated with high morbidity and mortality. So all these causes should be managed aggressively to avoid this life threatening complication.

Key Words: Acute renal failure, causes, septicemia, diarrhea, APH/PPH, abortions, hair dye, obstructive uropathy, nephrotoxins

INTRODUCTION

Acute Renal Failure(ARF) is a common and life threatening condition. It has been estimated that it occurs in about 2-7% of all hospital admissions.[1, 2]

Although there is no consensus clinical definition of ARF[3], but according to RIFLE criteria (a mnemonic for three levels of severity-Risk, Injury and Failure and two outcomes-Loss and End stage renal disease),it is abrupt deterioration in renal parenchymal function with serum creatinine of more than thrice normal (>3 mg/dl) and urine output less than 0.5ml/kg/hr for 24 hours.[4,5]ARF is a clinical syndrome characterized by rapiddecline inglomerular filtration rate(GFR), which leads to disturbance in fluid, electrolytes and acid-base homeostasis and retention of nitrogenous waste products.

Acute kidney injury (AKI) is recently suggested as the new nomenclature for ARF. The terminology of AKI was introduced to emphasize the importance of less severe impairment of kidney functionwhich begins long before sufficient loss of renal excretory function and can be determined by blood, urine ortissue tests or imaging studies.[6,7] Thus the term failure represents only a part of spectrum of damage to kidney.

ARF is a significant problem in hospitalized patients and is associatedwith high morbidity and mortality rates.Hospital and ICU mortality rates of patients with ARF are 25% to80%.[8]

The etiology of ARF is often multi-factorial and can be classified into three groups; pre renal, renal and post renal.

Prerenal azotemia is characterized by a decrease in GFR due to a decrease in renal perfusion pressure without damage to the renal parenchyma. Causes of prerenalazotemia include: hypovolemia resulting from conditions such as hemorrhage, vomiting or diarrhea; impaired cardiac output resulting from heart failure with cardiogenic shock; decreased vascular resistance resulting from conditions such as sepsis or vasodilator medications.

The most common renal cause is acute tubular necrosis.[9] It can be either ischemic or nephrotoxic. Prolonged or profound prerenal azotemia can result in ischemic damage to the kidney. Nephrotoxins which cause ATN can be exogenous or endogenous. Exogenous nephrotoxins include radio-contrastagents and certain antibiotics like aminoglycosides. Endogenous toxins include hemoglobin and myoglobin. Acute hemolysis causes release of hemoglobin from red blood cells and hemoglobinuria. Hemoglobin is nephrotoxic and leads to acute tubular necrosis. Transfusion reaction and black water fever in falciparum malaria are common examples.

In the past few years paraphenyline di-amine (hair dye) has emerged as an important
cause of ARF in our population. Its ingestion is usually suicidal. It leads torhabdomyolysis and release of myoglobin which causes myoglobinuria and acute tubular necrosis leading to ARF.[10]

Acute glomerulonephritis is another intrinsic cause of ARFbut is relatively uncommon.

Post renal causes include obstructive uropathy which may be due to stones, strictures, benign prostatic hyperplasia or malignancy.

This study was aimed to identify the causes of acute renal failure in patients from Southern Punjab admitted in medical wards of Nishtar Hospital Multan. Identification of causes of ARFwill enable health careservice providers to prevent the number of episodes of this life threatening condition of ARF and reduce its mortality

MATERIALS AND METHODS

Patients of acute renal failure of ages 15 years and above admitted in medical wards of Nishtar Hospital Multan from September 2012 to March 2013were included in the study.

Patients who were already diagnosed cases of chronic renal failure, had small kidney size (< 9cm inlength) orloss of corticomedullary differentiation on USG, serum creatinine < 3mg/dl or duration of symptoms >3 months were excluded from the study.

Permission was taken from ethical committee of Nishtar HospitalMultan. Informed consent was taken from patients about their inclusion in this study. History regarding the biodata of the patients, causative factors, symptoms and duration of onset was taken. Clinical examination included vital signs, jugular venous pulse, basal crepitations and signs of dehydration. Venous blood samples for serum creatinine were sent to central lab Nishtar Hospital and USG abdomen was done by radiology department of Nishtar Hospital. Information including all variables (age, gender, serum creatinine, cause of ARF) was noted on a proforma.

Mean±SDwas calculated for age of patient and serum creatinine. Frequencies and percentages were calculated for gender and cause.

RESULTS

One hundred and thirty six patients meeting the inclusion and exclusion criteria were studied. Of these,53(39%) were males and 83(61%) were females. The age of patients ranged from 15 to 82 years with a mean age of40.43±18.56. Serum creatinine level ranged from 3.1 to 18.4 mg/dl with a mean of 6.20±3.01 mg/dl.

In our study the most common causes of ARF were septicemia and diarrhea found in 30(22%) patients. Other causes found were: obstructive uropathy in 15(11%) cases, antepartum/postpartum hemorrhage (APH/PPH)in 14(10.29%), hair dye ingestion in 13(9.6%), septic abortions in 12(8.8%), glomerulo nephritis in 10(7.35%), nephrotoxins in 8(5.9%), hemolysis in 6(4.4%) and cardiac failure in 5(3.7%). Details of individual cause of ARF with age and sex distribution is as shown in table 1.

Nine patients (6.6%) had more than one of acute renal failure. Detail is shown in table 2.

If we exclude the patients with causes specific for females (APH/PPH, septic abortion and hair dye), then out of remaining 97 patients, 51(52.6%) were males and 46(47.4%) were females and mean age of patients was 46.56±18.43.

Table No.I: Age and sex distribution of individual causes of ARF

Cause	Total			Male			Female		
	No(%)	MeanAge(yrs)	Range (yrs)	No(%)	Mean Age(yrs)	Range (yrs)	No(%)	Mean Age(yrs)	Range (yrs)
Diarrhea ±vomiting	29(21.3)	50.03±18.50	16-82	15(51.7)	55.2±20.09	20-82	14(48.3)	44.5±15.45	16-70
Sepsis	23(16.9)	44.26±18.93	16-80	10 (43.5)	55.2±17.34	27-80	13(56.5)	35.84±15.96	16-74
Obstructive	13(9.6)	58±16.22	18-79	9(69)	57.22± 16.70	18-74	4(31)	59.75± 17.42	45-79
Hair dye	13(9.6)	23.3±5.98	15-38	2(15.4)	28.5±13.43	19-38	11(84.6)	22.27±4.29	15-27
APH/PPH	11(8.1)	26.18 ±4.72	19-33	-	-	-	11(8.1)	26.18 ±4.72	19-33
Septic Abortion	10(7.4)	26.1 ±6.08	18-39	-	-	-	10(7.4)	26.1 ±6.08	18-39
GN	9(6.6)	28.9±8.97	17-45	7(77.8)	29±10.16	17-45	2(22.2)	28.5±4.94	25-32
Multiple causes	9(6.6)	35.88 ±13.90	26-68	1(11.1)	-	68	8(88.9)	31.87 ±7.43	26-49
Nephrotoxins	8(5.9)	47.1±18.03	18-70	3(37.5)	45±25.63	18-69	5(62.5)	48.4±15.33	27-70
Hemolysis	6(4.4)	27.5±6.31	21-38	4(66.7)	25.25±4.71	21-32	2(33.3)	32±8.48	26-38
Cardiac failure	5(3.7)	59.8±10.89	41-68	2(40)	66.5±2.12	65-68	3(60)	55.3±12.66	41-65
Total	136(100)	40.4 ±18.56	15-82	53(39)	48.79±20.07	17-82	83(61)	35.08±15.23	15-79

Table No.2: Multiple causes(n=9)

Common causes	No of patients
Septicemia	7
APH/PPH	3
Abortion	2
Obstruction	2
GN	1
Diarrhea	1
Combination	
Combination	No of patients
Septicemia + PPH	3
Septicemia + obstruction	2
Abortion + APH/PPH	2
Septicemia + diahrrea	1
Septicemia + GN	1

DISCUSSION

ARF is an abrupt deterioration in renal excretory functionand typically diagnosed with accumulation of products of nitrogen metabolism such as urea and creatinine.It has many causes which may be pre renal, renal and post renal. Its etiology varies in various parts of the world. Common risk factors as observed in different studies include diarrhea, sepsis, obstructive uropathy, septic abortions, APH/PPH and glomerulonephritis. Various new causative agents like hair dye poisoning have been recognized. ARF is a serious condition with many life threatening complications. The pattern of ARF varies in different parts of the world according to environmental, geographic and socioeconomic conditions.[11]

The purpose of our study was to determine frequency of different causes of ARF in the population of Southern Punjab admitted in Nishtar Hospital Multan.

Our study consisted of 136 patients out of which 39% were males and 61% were females. In another study conducted by Chijioke[12], 46.5% cases were males and 53.5% cases were females. Like our study ARF was more prevalent in females. But if we exclude the female specific causes (like abortions, APH/PPH and hair dye) in our study, then male to female ratio was almost equal (52.6% males and 47.4% females- ratio 1.1:1).Another study done by Kaballo[13] showed that 64% of the cases were males and 36% were females. Here gender distribution was different from our study.

In our study, the patients with ARF were not significantly older as the mean age of our patients was 40.43 years. Excluding female specific causes with relatively younger ages, mean age increased to 46.56 years. Unlike our study age has been reported as a risk factor in a study by Pascual et al.[14] However, El-Lozi et al[15] could not demonstrate a relationship between patient's age and ARF.

The most common causes of ARF observed in our study were septicaemia and diarrhea alone or with vomiting.

Septicemia alone was observed in 16.9% cases. It was also seen in combination with other pathologies in another 5.1% cases. Overall septicemia was seen in 22% cases. In a study carried out by Soliman[16] in Egypt sepsis contributed to only 11.7% cases. While other studies conducted in third world countries like Nigeria by Chijioke[12] and in Peshawar by Khan et al[17] showed that sepsis was the commonest factor contributing to 36% and 20% cases respectively. These results were similar to our study. The cause of septicemia in our set up is due to inadequateaseptic measures practiced during surgery and inadequate antibiotic therapies. Early identification of infection and its treatment with appropriate antibiotics can reduce the incidence of septicemia and ARF as its complication.

The other most common cause in our study was diarrhea with or without vomiting which was observed in 21.3% cases (22% overall). Diarrhea contributed to 14% and 22% casesin the studies by Khan et al[17] and Chijioke[12] respectively. Soliman[16] reported that it contributed to only 1.96 % cases. In developing countries poor personal hygiene, lack of sanitation and clean drinking water are responsible for high percentage of diarrhea. Inadequate medical facilities and rehydration leads to ARF in patients of diarrhea.

Obstructive uropathy was found in 11% cases in our study. Khan et al[17], Soliman[16] and Kaballo[13] et al found it in 10, 9.8% and 9% cases respectively. These values are close to our study. On the other hand Chijioke[14] found obstructive uropathy in only 5.8% cases.

The next cause found in our study was APH or PPH (10.29%). In the studies of Khan et al[19] and Chijioke[14] it was found in only 2% and 4.6% cases respectively. These results were different from our study. In our country lack of antenatal care, deliveries conducted by untrained dais and in adequate resuscitative measures are responsible for high percentage of APH or PPH causing ARF.

In our study hair dye poisoning constituted 9.6% cases. Kaballo[13] found that it was responsible for 13.4% cases of ARF. Chrispal[18] reported that 38.5% persons ingesting hair dye developed renal failure. It has emerged as a new risk factor of ARF in the past few years. Its use is mostly suicidal and most of the patients are females. Its easy availability is a major contributing factor to its increased use. Public awareness about toxicity of hair dye is an important measure for its prevention and its sale should be prohibited.

In our study abortions contributed to 8.8% cases of ARF. Khan et al[17] observed that abortions caused 10% cases of ARF. Their observation was similar to our

study. While Chijioke[12] found that only 2.3% cases were due to abortions. Over all obstetrical causes (abortions + APH /PPH) were responsible for 19.11% cases of ARF in our study. In the study by Naqvi et al 18% cases were due to obstetrical causes.[19] This high percentage of ARF due to obstetric causes is alarming and stresses the need of improvement in antenatal care in our country. Unnecessary induced abortions should be strongly discouraged.

Acute glomerulonephritis was responsible for 7.35% cases of ARF in our study while Chijioke[12] found glomerulonephritis in 9.3% case of ARF similar to our results. Soliman[16] found that it caused 15.6% cases of ARF which was more frequent compared to our study. This lower percentage in our study could be due to lesser availability of diagnostic facilities like renal biopsy and actual frequency could be much higher.

In our study nephrotoxins caused 5.9% cases of ARF. In the study of Al-Homrany

7.3% cases were due to nephrotoxins.[20] In the study by Soliman[16], nephrotoxins caused 15.6% cases of ARF which was much frequent than our study. Patients taking drugs which can cause nephrotoxicity need close monitoring of renal parameters.

Hemolysis was responsible for 4.4% cases of ARF in our study. While according to Chijioke and Khan et al, it caused 3.4 and 2% cases of ARF respevtively[12,17]. Another study conducted by Al-Rohani showed that hemolysis due to malaria was the commonest cause of ARF (27.9%).[21] But in our study all cases were due to mismatched blood transfusions. This shows the need of extreme vigilance for proper grouping and cross matching before blood transfusions.

Cardiac failure with shock caused 3.7% cases of ARF in our study. In the study of Soliman[16] it was the most common cause of ARF causing 19.6% cases. In the study of Khan et al only 2% cases were due to cardiogenic shock.[19].

CONCLUSION

Acute renal failure is a serious disorder with considerable morbidity and mortality. Our study suggested that septicemia, diarrhea, obstetric causes (APH/PPH, abortions), hair dye ingestion, obstructive uropathy, glomerulo nephritis nephrotoxins, hemolysis and cardiac failure are its common causes in our set up. Early detection and prompt treatment of all these causes can prevent this serious condition. This includes following strict aseptic measures during surgical procedures, early identification of infection and its treatment with appropriate antibiotics, improving hygiene to avoid diarrhea and early resuscitation in case of hypovolemia. Similarly, early diagnosis and treatment of obstetric complications causing APH/PPH and avoiding unnecessary induced abortions, prohibition of sale of hair dye, monitoring renal parameters in patients taking drugs known to cause renal impairment, proper grouping and cross matching to avoid miss matched transfusion reactions, early recognition and treatment of intrinsic renal disorders like glomerulonephritis are other important measures to avoid this dreadful disease.

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