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Editorial

The Costs Of Unsafe Blood and Strategy For Blood Safety

Blood transfusion is a vital component of every country's health care delivery system. It can be a life saving intervention, but it may also result in acute or delayed complications and carries the risk of the transmission of infections. Between 5% and 10% of HIV infections worldwide are transmitted through the transfusion of infected blood and blood products. Many more recipients of blood products are infected by hepatitis B and C viruses, syphilis and Malaria. Despite all the technological marvels that humanity is experiencing, a reliable and safe Blood supply, is still out of reach for the untold millions of peoples because of the following lacking:

1. Low priority given to Blood safety by the National Health Authority.
2. Chronic shortages of Voluntary Blood Donors as the source of safe Blood.
3. Absence of Quality Management s in the Blood Transfusion Centre
4. Recourse of Professional Donors as Family Donors and/or Relative Donors.
5. Lack of awareness of Clinical Use of Blood by Physicians.
6. Social culture/stigma yet not to be as compatible with Blood safety.

The main reason for starting All Voluntary Donor is to ensure self-sufficiency in Blood/Products from voluntary, anonymous and non-remunerated, regular Donors in accordance with the recommendations of WHO. In the past strategies to promote blood safety tended to focus primarily on screening of donated blood for transfusion transmissible infections (TTIs). However while systematic screening is essential it is insufficient in itself to ensure the safety of the blood supply. Evidence from all regions of the world indicates that the absence of a nationally coordinated blood programme lack of safe blood donors and the unnecessary clinical use of transfusion are equally important contributory factors to the transmission of infection by transfusion. The WHO strategy for blood safety emphasizes an integrated four fold approach. Effective quality assurance should form an essential part of this approach:

1. The establishment of a coordinated blood transfusion service that can provide adequate and timely supplies of safe blood for all patients in need
2. The collection of blood only from voluntary non remunerated blood donors from low risk populations and the use of stringent donor selection procedures.
3. The screening of all donated blood for transfusion transmissible infections. including HIV hepatitis viruses syphilis and other infectious agents, and blood grouping compatibility testing and processing of blood
4. Reduction in unnecessary Transfusion through appropriate Clinical Use of Blood (CUB) including use of alternative I/V fluids to Transfusion wherever possible.

In developed countries, the blood supply comes from voluntary non-remunerated blood donors. Globally, developing countries contribute only 16% of the voluntary non-remunerated blood donors which shows that the blood supply depends on a very high proportion of family/replacement/paid donors in these countries. Voluntary non-remunerated blood donors are at significantly lower risk for transfusion- transmissible infections than family/replacement donors and paid donors. In addition, many transfusions are clinically unnecessary, providing little or no benefit to the patients who received them and wasting a scarce resource that may result in a shortage of blood products for patients in real need. Blood is a national resource. It is the responsibility of government to ensure that the blood supply is safe, adequate to meet the needs of patient populations and available to all who require it. It is also the responsibility of governments to ensure that all

clinicians are trained to prescribe blood and blood products only when clinically necessary. This cannot be achieved without cost. However, an unsafe of inadequate blood supply is ultimately even more costly- in both human and economic terms. The human costs of unsafe blood are incalculable- morbidity and mortality resulting from the transfusion of infected blood have far reaching consequences, not only for the recipients themselves, but also their families, their communities and the wider society. Since a person can transmit the infection during the asymptomatic phase, it can contribute to an ever – widening pool of infection in the wider population. The economic costs of a failure to control the transmission of infection have already been graphically demonstrated in countries with a high incidence and prevalence of HIV and AIDS – increased requirements for medical care, higher levels of dependency and the loss of productive labour place heavy burdens on overstitched health and social services and on the national economy. While not the main route of transmission, blood transfusion is almost 100% effective in transmitting HIV and other infections agents. The incidence of transfusion-transmitted infection – and its associated costs- will almost certainly increase in countries that do not take stringent measures to ensure the safety of their blood supplies. An investment in safe and adequate supplies of blood is a cost-effective investment in the health and economic wealth of every nation. Money spent for Donor recruitment often come back in better economy in Blood Transfusion Service and in higher Blood safety.

(Sir Salimullah Med Coll J 2017; 25: 1-2)

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Prescribing Pattern at Out-Patient Department in a Tertiary Level Hospital in Bangladesh

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Abstract:

Inappropriate prescribing of drugs is a major health concern in developing countries like Bangladesh. Appropriate prescribing implies the choice of medicines based on efficacy, safety, suitability and cost relative to other drugs or treatments that may be available. Medicines should be prescribed only when they are necessary. Irrational prescribing may take many different forms, for example, poly-pharmacy, over-use of antibiotics and injections, failure to prescribe in accordance with clinical guidelines and inappropriate self-medication. A study was therefore undertaken in a tertiary level hospital situated in Dhaka city of Bangladesh to assess the prescribing pattern of drugs. Prescriptions of 205 patients were collected from outpatient departments of the hospital over a period of January 2015 to December 2015. Prescription pattern was analyzed using prescribing indicators suggested by World Health Organization (WHO). The average number of drugs per prescription was found 2.97. Only 8.37% drugs were prescribed by their generic names. The percentage of encounters with antibiotics was 40.98%, Vitamin/Tonic preparations accounted for 7.39% of the total drugs prescribed. In this study, Poly-pharmacy was found, with 94.1% of prescriptions having more than one drug. Out of 205 prescriptions, all prescriptions were duly dated along with patient name. Age and sex of the patients was present in 94.64% and 95.61% prescriptions respectively, however patient address was found missing in all prescriptions. Symbol "Rx" was written in 88.78% of prescriptions and 90.2% prescriptions were devoid of clear diagnosis. Majority (86.83%) of prescriptions contained strength of drugs but 79.02% prescriptions contained dosage form along with their name. Among all drugs (609), the most common group of drug was antiulcer drugs 143 (23.48%) and commonly prescribed antibiotic was ciprofloxacin 22.67%. The findings from this study showed a trend towards inappropriate prescribing. Hence, there is a need for effective intervention program to encourage the physicians for more appropriate prescribing.

Key words : *Prescribing pattern, drug, WHO prescribing indicator, Polypharmacy.*

(Sir Salimullah Med Coll J 2017; 25: 3-7)

Introduction

Prescription writing is a science and art as it conveys the message from the prescriber to the patient[1]. A prescription order is a written instruction of doctors to pharmacist to supply drugs in particular form to a patient and the directions to the patients regarding the use of medicines. Periodic evaluation of drug utilization patterns needs to be done to enable suitable modifications in the prescription of drugs to increase the therapeutic benefit and decrease the adverse effects[2].

Medicines are an integral part of the health care, and modern health care is impossible without the

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availability of necessary medicines. They not only save lives and promote health, but prevent epidemics and diseases too. Accessibility to medicines is the fundamental right of every person[3]. However, to bring optimal benefit, they should be safe, efficacious, cost-effective and rational. Treating the elderly is the most challenging part to the physicians and it can be sorted only through a holistic multidisciplinary approach[4].

Although drugs are not the only therapeutic interventions, which provide a desirable health level, rational use of them plays an important role in the efficacy and sufficiency of therapeutic interventions. Rational drug utilization means that each individual receives the right medicine, in an adequate dose for an adequate duration, with appropriate information and follow-up treatment, and at an affordable cost[5].

A study of prescription pattern is an important tool to determine rational drug therapy, maximize utilization of resources and to reduce prescription errors. In 2008, the world health organization (WHO) reported that more than half of all medicines are prescribed dispensed or sold inappropriately and that half of all patients fail to take them correctly[6].

National Drug policy (NDP, 2005) states that only registered drugs should be allowed to distribute and sell throughout the country under person having professional qualification and holding professional license. NDP (2005) again indicates that no drugs other than over the counter (OTC) should be sold or dispensed without prescriptions. Rational use of drugs (RUD) should be ensured by conducting survey on the system of prescribing, dispensing and patient compliance. Monitoring and reporting adverse drug reactions should be done seriously to ensure safe and rational use of drugs in the country. To improve the overall drug use, especially in developing countries, international agencies like the world health organization (WHO) and the international network for the rational use of drugs (INRUD) have engaged themselves to evolve standard drug use indicators. Changing existing bad prescribing habits is a difficult task, so appropriate training is required before habits develop. Another approach to preventing bad prescribing habits is prescription audit (PA).

There is an urgent need to ensure that patients are always given evidence-based, cost-effective and rational treatments. Gaining insight into physician's pattern in order to identify prescribing problem is the fundamental step in improving the quality of prescription and patient care. Keeping these facts in consideration, the present study was planned to assess the prescription pattern at out-patient departments in a tertiary level hospital of Bangladesh.

Materials and Methods

The study on the prescribing pattern was conducted at outpatient departments in Dhaka Medical College Hospital (DMCH) as a tertiary level hospital, over a period of one year starting from January 2015 to December 2015. Prescriptions of outdoor patients at Dhaka Medical College Hospital (DMCH) were the study population. The study was completely observational to find out whether doctors of the selected hospital were prescribing according to WHO prescribing indicator or not. Poly-pharmacy in the prescriptions was present or not and if present, then to what extent it was present in a definite population (prescriptions) in a particular point of time. To achieve these purposes, a descriptive type of cross-sectional study was conducted.

WHO prescribing indicators:

- Number of drugs in an encounter
- Drugs prescribed by generic names
- Drugs prescribed from Essential Drug List.
- Number of antibiotics in an encounter
- Number of injections in an encounter
- Number of vitamin/tonic in an encounter

Ethical Considerations

The study was approved by Ethical Committee of National institute of Preventive and Social Medicine

Result

In the study, it was found that a total of 609 drugs were prescribed to 205 patients with an average of 2.97 drugs per encounter (Table-I). Most of the drugs were prescribed by brand name (91.6%), Only 8.37% drugs were prescribed by their generic names in this study (Table-II). It is important to note that drugs should be prescribed in their generic names to avoid confusion.

Table-I
Average number of drugs prescribed per prescription

Number of Mv prescription	Number of Drugs prescribed	Average number of drugs per prescription
205	609	2.97

Table-II
Percentage of drugs prescribed by generic name or brand name

Drug's name	Number of drugs (n=609)	Percentage %
Drugs in brand name	558	91.63%
Drugs in generic name	51	8.37%
Total	609	100.00%

Table-III shows, 47.78% drugs were prescribed from the Essential Drug List. The percentage of encounters with antibiotics was 40.98%. With regard to dosage forms, majority of drugs prescribed were oral (98.2%) followed by topical (1.8%).Among all encounters (205), injection was not recommended in any prescription. Vitamin/ Tonic preparations were included on 21.95% of encounters (Table-III).

Table-III
Percentage of different drugs prescribed in prescriptions (n=205)

Drug's name	Number of drugs in prescriptions	Percentage %
Antibiotic	84	40.98%
Vitamin/Tonic	45	21.95%
Essetial drug	98	47.78%
Injection	Nil	0%

Among the 205 prescriptions, majority (36.6%) were found to have three drugs. 26.8% were found to have two drugs and 26.3% were found to have four drugs while 5.9% were found to have one drug. 3.9% prescriptions contained five drugs (Table-IV). Only one prescription contained six drugs which was the maximum number of drugs prescribed in a consultation in this study. Poly-pharmacy was present, with 94.1% of prescriptions having more than one drug. All patients who were coming to Out Patient Department were prescribed at least a drug.

Table-IV
Poly-pharmacy in the prescription

Number of drug written in prescription	Number and percentage of prescriptions	Total Number of Drug
One	12(5.9%)	12
Two	55 (26.8%)	110
Three	75 (36.6%	225
Four	54 (26.3%)	216
Five	8 (3.9%)	40
Six	1 (0.5%)	6
Total	205 (100%)	609

Table-V shows, out of 205 prescriptions, all prescriptions were duly dated along with patient name. Age of the patients was present in 94.64% prescriptions. Sex of the patients was missing in 95.61% prescriptions, however patient address was found missing in all prescriptions. Symbol 'Rx' was written in 88.78% of prescriptions.

Table-V
Adherence of prescription to the format

Contents of the Prescriptions	Number (n=205)	Percentage of Prescriptions
Supercription		
Date on prescription	205	100%
Name of the patients	205	100%
Age of the patients	194	94.64%
Sex of the patients	9	4.39%
Address of the patients	Not written	…
Rx (Written on the prescriptions)	182	88.78%
Inscription		
Name and dosages of drugs	162	79.02%
Strength of drugs	178	86.83%
Transcription		
Signa (Written instruction to the patient)	29	14.14%
Signature of the prescriber	179	87.32%
Doctor's identity in prescription	Not written	…

Majority (86.83%) of prescriptions contained strength of drugs where 79.02% prescriptions contained dosage form along with their name (Table-V). Some drugs were written in abbreviation like P/C for paracetamol. Most of the prescriptions (87.32%) contained doctor's signature but all prescriptions (205) were devoid of doctor's name, contact number and address (Table-V).

In prescriptions, the most common group of drug was Anti ulcer drugs 143 (23.48%), followed by Antihistamines 101 (16.58%), Antipyretic 92 (15.11%), Antibiotic 84(13.79%), NSAIDs 65 (10.67%), Vitamin/Tonic 45 (7.39%), Antifungal 29 (4.76%), Antiemetic 15 (2.46%). 12 (1.97%) drugs prescribed for asthma patient and 23 (3.78%) other drugs also prescribed (Table-V; Fig-2).

Table-V I
Common group of drugs prescribed

Group of drug	Number of drug in prescription (n=609)	Percentage of prescription (%)
Anti ulcerant	143	23.48%
Antihistamine	101	16.58%
Antipyretic	92	15.11%
Antibiotic	84	13.79%
NSAIDs	65	10.67%
Vitamin/Tonic	45	7.39%
Antifungal	29	4.76%
Antiemetic	15	2.46%
Bronchodilator	12	1.97%
Other	23	3.78%
Total	609	100.00%

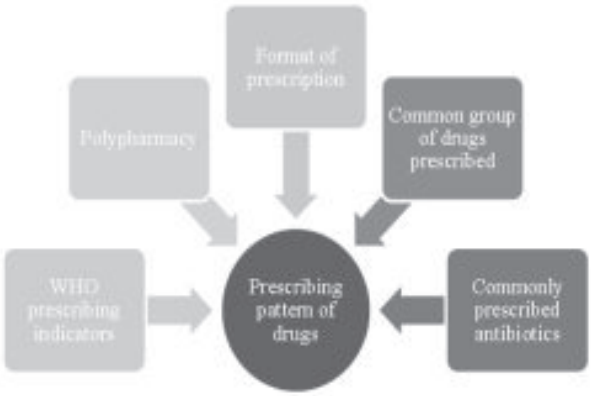

Fig.-1 : *Conceptual Framework of the study*

Discussion

Correct diagnosis of a disease and its management with medicines, constitute important aspects of patient care. For this it is very prudent to study the prescribing practice in order to find out lacunae, if any, and suggest remedial measures to overcome the same. Prescribing pattern of drugs reflects the clinical judgment of the clinicians. Average number of drugs per encounter reported in this study was 2.97. Present study produced similar as like that conducted in Andhra Pradesh 3.01 and Delhi 3.03[7]. It was 3.52 in Allahabad[8]. International studies report values ranging from 1.3 in Zimbabwe[9] to 4.51 in Pakistan[10]. A high average number of drugs might be due to financial incentives to prescribers to prescribe more, lack of therapeutic training of prescribers, or shortage of therapeutically correct drugs. The low values might mean there is constraint in the availability of drugs, or prescribers have appropriate training in therapeutics.

Use of generic names in encounter eliminate the chance of duplication of drug products and also reduce the cost of the patient. In this study, most of the drugs were prescribed by brand name (91.6%), Only 8.37% drugs were prescribed by their generic names. Essential medicines and rational use of medicines are two sides of a coin – inseparable from each other and mutually dependent. Increase in the use of essential medicines makes the medicine therapy more rational[11].The percentage of drugs prescribed from the essential drugs list of Bangladesh was 47.78% which is almost less than half of total drugs prescribed.

In this study, the percentage of prescriptions with an antibiotic was 40.98%. According to WHO, 15-25% of prescriptions with antibiotics are expected in most of the developing countries, where infectious diseases are more prevalent[12]. In a 3rd world developing country like Bangladesh, prevalence of infectious diseases is higher than the developed countries. That is why, in this study the antibiotic utilization rate was higher than that of developed countries.

The WHO recommended target for injection exposure is 10% or less. In this study, the percentage of encounters with an injection prescribed was 0% (Table-III). So the observed proportion of injectable drugs prescribed was

considered acceptable according to WHO recommendations. Vitamin/Tonic preparations accounted for 7.39% of the total drugs prescribed. Most commonly prescribed vitamins were Calcium preparations and Vitamin B complex.

Lesser number of drugs is a positive sign as poly-pharmacy is known to be a contributing factor for hospitalizations. A staggering 30.7% of prescriptions had 4 or more drugs revealed a trend of poly-pharmacy. In this study, all prescriptions (205) were duly dated along with patient name. Age of the patients was present in 94.64% prescriptions (Table-V). Sex of the patients was missing in 95.61% prescriptions however patient address was found missing in all prescriptions. Symbol 'Rx' was written in 88.78% of prescriptions.

It was found that 90.2% prescriptions were devoid of clear diagnosis (Table-V). Majority (86.83%) of prescriptions contained strength of drugs where 79.02% prescriptions contained dosage form along with their name. The patient's medical information parameters were never studied before in Bangladesh, therefore could not be compared.

Among all drugs (609), the most common group of drug was Anti ulcer drugs 143 (23.48%), followed by Antihistamines 101 (16.58%), Antipyretic 92 (15.11%), Antibiotic 84 (13.79%), NSAIDs 65 (10.67%), Vitamin/Tonic 45 (7.39%), Antifungal 29 (4.76%), Antiemetic 15 (2.46%). 12 (1.97%) drugs prescribed for asthma patient and 23 (3.78%) other drugs also prescribed. This shows that there was a tendency to prescribe anti-ulcer drugs, anti-allergic drugs and antipyretics commonly.

Conclusion

Among the five steps of core prescribing indicators, only an injection prescribed was within the WHO recommendations. Otherwise, the mean number of drugs was high, the percentage of prescribing by generic name was very low and percentage of drugs prescribed from national essential drug list was low, the percentage of encounters with an antibiotic was very high. The consultation date on prescription along with patient name and age was found to be fairly good. Presence of drug doses (79.02%) and strengths (86.83%) were found satisfactory though presence of proper instructions was very low. The results indicate a considerable scope for improving the prescribing pattern of drugs in the medical out-patient departments. The efforts of the prescriber can be successful and patient satisfaction can be achieved only if the patient receives proper treatment for his disease or illness. This study will act as a feedback to the prescribers, so as to create awareness about the appropriate prescribing of drugs.

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Morphometric Study of Height and Breadth of Calcaneal Tuberosity of Fully Ossified Dry Human Left Calcaneus

Fahmida Zaman[1], Humaira Naushaba[2], Uttam Kumar Paul[3], Laila Farzana Khan[4], Mahbuba Akter[5], Israt Jahan Tania[6]

Abstract

Context: *The calcaneus is the largest tarsal bone and projects posterior to tibia and fibula as a short lever for muscles of calf attached to its posterior surface. The posterior surface of calcaneus curves forward and continuous onto the plantar surface of bone as calcaneal tuberosity providing attachment of tendoachillis and short plantar ligament. The aim of this study was to determine the morphometry of height and breadth of calcaneal tuberosity.*

Materials and methods: *A cross sectional analytical type of study was carried out on one hundred and fifty five(155) fully ossified dry human left calcaneus at the department of Anatomy, Sir Salimullah Medical College, Dhaka from January 2014 to June 2015.*

Results: *The mean (±SD) value of height and breadth of calcaneus were greater in male than that of female and was statistically significant ($p<0.01$).*

Conclusion: *This study will serve as a reference value in the field of anatomy, planning treatment and diagnostic procedures of orthopaedic surgery, kinesiology and also in physical medicine and rehabilitation.*

Key words: *Calcaneal tuberosity, morphometry, Height and Breadth*

(Sir Salimullah Med Coll J 2017; 25: 8-11)

Introduction

The calcaneus is a weight bearing tarsal bone. It belong to proximal row and forms the posterior pillar of two longitudinal arches of foot. It articulates with the talus above and cuboid in front[1]. It is a rectangular block of bone characterized by sustenticulum tali, a shelf that projects from the upper border of its medial surface[2]. Since calcaneus bone is located at the rear portion of foot, it is most vital in bearing weight of body. With upper surface of talus it forms subtalar joint[3].

It has six surfaces. superior or proximal, plantar or inferior, anterior, posterior, lateral and medial[4]. The posterior surface of heel region is rough and circular and is divided into upper, middle and lower parts. The calcaneal tendon (Achilles tendon) attaches to the middle part.The upper part is separated from calcaneal tendon by a bursa.The lower part is subcutaneous weight-bearing surface curves forward and continuous onto the plantar surface of bone as calcaneal tuberosity[5].

The calcaneal tuberosity projects forward on plantar surface as a large medial process and small lateral process separated from each other by a V-shaped notch. At the anterior end of plantar surface is a tubercle(calcaneal tubercle) for the posterior attachment of short plantar ligament of the sole of the foot[6].

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The heel bone calcaneus has to support the whole weight of the body when move load is equal to 20 times on own body weight. The load is softened by a pillow of fat under the heel and a large ligament under the sole of the foot. This is called the plantar fascia and it pulls the heel bone forward. If an athlete does not warm up properly or a person with a sedentary job exercises heavily during weekends, they might overload the muscles of the calf or strain the Achilles tendon. When overloaded the tendon places extra strain on plantar fascia and develop plantar fasciitis[7].

Tendoachillis is a conjoint tendon of insertion of gastocnemius and soleus. It acts as a prime mover of plantar flexion of the foot at the ankle joint. Achilles tendon enthesopathy is the pain at the insertion of Achilles tendon at the posterosuperior aspect of calcaneus. The cause is chronic traction of Achilles tendon on calcaneus[8].

Morphometric measurements of tuberosity of calcaneus improves the knowledge of anatomy, treatment and diagnostic procedures of orthopaedic surgery, kinesiology, physical treatment and rehabilitation[9].

Materials and methods

One hundred and fifty five (155) dry left sided adult human calcaneus were collected from medical students of Sir Salimullah Medical College (SSMC), Dhaka and Dhaka National Medical College.

Though calcaneus is an irregular bone, height and breadth of tuber calcanei of calcaneus was measured with the help of flexible metallic wire and then the straight measurements at values were considered.

For the measurement of height of tuber calcanei (HTC) one point was given on superior most point of tuber calcanei and another point was given on inferior most point of processus medialis tuberis calcanei. The distance between two dots was measured with flexible metallic wire which is represented by HTC. Then the wire was straightened and measured with digital slide caliper (Fig.-1).

Fig.1: *showing height of tuber calcanei measured by flexible metalic wire.*

For the measurement of breadth of tuber calcanei (BTC) one point was given on lateral most point of tuber calcanei and another point was given on medial most point of tuber calcanei. The distance between two dots was measured with flexible metallic wire which is represented by BTC. Then the wire was straightened and measured with digital slide caliper.This measurement is perpendicular to the height of tuber calcanei. (Fig.-2)

Fig.-2: *showing breadth of tuber calcanei measured by flexible metallic wire.*

Ethical clearance

This study was carried out after approval of research protocol by Institutional Ethics Committee (IEC) of Sir Salimullah Medical College, Dhaka.

Results

The mean (±SD) height of tuber calcanei of left calcaneus was 42.09 (±4.24) mm in male and 38.67 (±4.32) mm in female. There was significant difference ($p<0.01$) in height of tuber calcanei when compared between male and female.

The mean (±SD) breadth of tuber calcanei of left calcaneus was 33.16 (±3.81) mm in male and 29.61 (±5.00) mm in female. There was significant difference ($p<0.01$) in breadth of tuber calcanei when compared between male and female.(Table-1, Fig-1)

Table-I

Height and breadth of tuber calcanei of left calcaneus in male and female

Sex	Height of tuber calcanei Mean±SD in mm	Breadth of tuber calcanei Mean±SD in mm
Male (n=80)	42.09 ± 4.24 (33.29-57.94)	33.16 ± 3.81 (18.04-46.10)
Female (n=75)	38.67 ± 4.32 (28.40-51.72)	29.61 ± 5.00 (16.16-56.13)
P value	0.000**	0.000**

Figures in parentheses indicate range. Comparison between sex was done by unpaired Student's 't' test. **= P value < 0.01, significant at 1% level of significance (two tailed), n= sample size

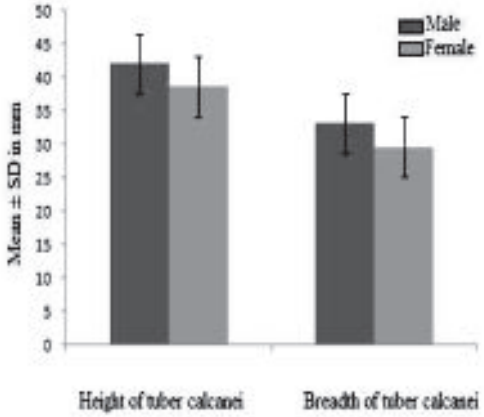

Fig 3: *Bar diagram showing height and breadth of tuber calcanei of left calcaneus in male (n=80) and female (n=75)*

Discussion

In the present study mean (±SD) height and breadth of tuber calcanei was found greater in male than that of female and was statistically significant ($p<0.01$).

The values of present study was dissimilar ($p<0.01$) to the findings reported by Sakaue, K.[10] (2011) who carried out study on Japanese people. The values of present study was dissimilar ($p<0.01$) to the findings reported by Sakaue , K.[10] (2011) who carried out study on Japanese population. These dissimilarities might be due to different ethnic and racial variation.

Sakaue, K.[10], 2011 (pp. 35-48) examined 143 calcaneus of both sides. Among them 72 were in male and 71 were female. The mean (±SD) height of tuber calcanei was 44.9±3.0 mm in male and 40±2.5mm in female. There was statistically significant difference ($p=0.001$) when compared between male and female and the mean (±SD) breadth of tuber calcanei was 30.0±2.0 mm in male and 26.2±1.9mm in female. There was statistically significant difference ($p=0.001$) when compared between male and female.

Conclusion

The present study was an attempt to construct data on height and breadth of tuber calcanei of left sided human calcaneus which will serve as a reference value in the field of anatomy, planning treatment and diagnostic procedures of orthopaedic surgery, kinesiology and also in physical medicine and rehabilitation[9].

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Evaluation of Neurological Abnormality after Coronary Artery Bypass Surgery: Comparison between Onpump and Offpump Techniques

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Abstract

Introduction : *The Neurological injury is an important complication after coronary artery bypass surgery (CABG). The incidence of neurocognitive impairment after cardiac surgery varies from 20% to 80%. In this study we tried to analyze this difference of neurologic dysfunction between On-pump CABG and Off-pump CABG (OPCAB).*

Methods and Materials: *This is a case control study done in National Institute of Cardiovascular Disease (NICVD), Dhaka during the period of July 2012 to June 2014. Sixty Patients with Ischemic heart disease were the study population. Group- A includes 30 patients underwent on pump CABG, Group-B 30 patients underwent OPCAB. All the patients of both the groups were followed up to 2 month's postoperatively to find out any neurological and neurocognitive dysfunction.*

Results: *Neurocognitive dysfunctions in the early postoperative period shows significantly different among the groups. In Group-A showed more reduction in neurocognitive function then Group-B. This neurocognitive dysfunction gradually improved by the end of two month postoperative period. Only 6.66% patient in Group-A was found neurocognitically dysfunctional and were referred to neurophysican for further treatment. In case of OPCAB Group, not a single patient was found neuorocognitically dysfunctional.*

Conclusion: *This study has convincingly shown cardio-pulmonary bypass (CPB) has had detrimental effect on neurological function. There is a higher incidence of neurocognitive dysfunction in On pump CABG procedure than OPCAB.*

Key words: *Neurological abnormality, Coronary artery bypass surgery on and offpump techniques.*

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Introduction

The Neurological injury is an important complication after coronary artery bypass surgery (CABG). There are two types of Neurological injury, Type-I includes stroke, transient ischemic attack and coma and the incidence is approximately 3 to 6 percent. Type-II injury is more subtle and includes impairment of cognitive functions. These defects associated with attention, concentration, short term memory, fine motor function and speed of the mental response. The incidence of neurocognitive impairment after cardiac surgery varies from 20% to 80%.[1] Based on prospective studies, however it is apparent that the incidence of subtle postoperative neurologic and neuropsychological abnormalities is much higher, closer to 50 percent in the first week after cardiac surgery.[2] These apparent high rate of subtle neurologic impairment detected prospectively are in sharp contrast to the considerably lower incidence of stroke after cardiac surgery, reported as 1-5 percent, in several large retrospective series from different centers.[3] There are several reasons for these apparent differences in the reported incidences the timing, thoroughness and the reproducibility of the neurologic examinations, as well as the incorporation of the preoperative assessment for comparison, all determine the

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sensitivity and accuracy with which postoperative neurologic dysfunction can be detected. Most importantly, many of the earlier studies were based on a retrospective chart review, which will only detected the most clinically obvious neurologic dysfunction syndromes as was elegantly demonstrated by Sotaniemi and his colleagues,[4] a retrospective chart review is inadequate as an assessment of the overall incidence of postoperative neurologic dysfunctions. In a study of 100 patients in whom a 37 percent incidence of neurologic dysfunction had been diagnosed by careful neurologic examination, the prevalence of cerebral abnormalities detected by retrospective analysis of the same patient pool was only 4 percent.[5] The incompleteness of the records, a reluctance to document apparently minor complication and most importantly insensitivity to subtle neurologic dysfunction are being the main reason for there apparent disparities. Many of the type of impairment now being investigated are sub-clinical and are not readily detectable by a standard "foot of the bed" assessment. The fact that many of these abnormalities are apparently transient also contributes to the tendencies to minimize their clinical relevance. It is now established that such reproducible and quantifiable dysfunction is an objective outcome measure and can at least act as a benchmark. In this study a simple battery of tests evolved by Peter Nestor & Jone Hodges that incorporates the Mini Mental state examination, gives a score of 30. A score of 24 or less out of 30 is considered as cognitive dysfunction, a score between 25 to 28 is consider as Neurocognitive impairment and a score of 29 to 30 is consider normal. Neuro psychometric tests assess specific domains of the brain. At present comprehensive neuropsychometric tests need to be administered to assess neurosychometric functions.[1]

Vast literature on the risk factors of neurobehavioral disorders after cardiac surgery indicates that postoperative decreased of neurological function seems to be associated with advanced age lower preoperative cognitive performance, higher degree of proximal atherosclerosis and length of clump or perfusion time.[6, 7, 8]

Methods and Materials

This cross-sectional study was performed in the Department of Cardiovascular Surgery, National Institute of Cardiovascular Disease (NICVD), Sher-E-Bangla Nagar, Dhaka, Bangladesh from July 2012 to June 2014. The study was carried out on patients with ischemic heart disease who underwent CABG. Total number of Patient was sixty, thirty in each group. Data were analyzed by statistical program for Social Science (SPSS). Inclusion criteria was all patients with Ischemic heart disease and underwent Coronary artery bypass graft surgery under cardiopulmonary bypass and Coronary artery bypass graft surgery without cardiopulmonary bypass. Exclusion criteria were Patient associated with cerebro-vascular disease, neurological and psychological abnormality, Hepatic and renal insufficiency, Patient undergone any emergency cardiac surgery, Redo cardiac surgery and Patient associated with valve surgery and congenital surgery. Each group includes thirty patients. Group - A: On pump CABG, Group-B OPCAB. In both the group of the study the risk factors, such as diabetes mellitus, hypertension, smoking and hyperlipidemia were recorded and compared. A standard 12 lead ECG were taken in all cases pre-operatively and post-operatively and was examined for rate, rhythm, axis deviation, chamber enlargement and evidence of ischemia. Pre-operative Q-wave were recorded in all the patients of both the groups when presents and compared. Two dimensional Echocardiography with motion mode and color flow Doppler study was performed pre-operatively in both the groups to assess the functional status of the myocardium. Ejection fraction were recorded and competed among the groups. CAG was done pre-operatively in all patients in both groups to find out the site to lesion percentage of luminal stenosis, distal flow of dye and assessment of graftable site and the number of diseased vessels. Only double and triple vessel diseases were included in the study. Neurological examination was done in both the groups pre-operatively and post-operatively for assessment. Muscle power, Muscle tone and reflexes were recorded for motor function and pain and touch sensation was recorded for sensory function. Mini Mantel state (MMS) Examination was done in both the groups pre-operatively and post-operatively and at the time of discharge and follow up. Orientation, Anterograde memory, Attention and calculation, Recall and language test were done. And the score were compared in both the groups. ACCT (Aortic cross clamp time), ECCT (Extracorporeal circulatory time) and total operation time were recorded in on-pump group per-operatively to see the distribution in the group.

All the patients of both the groups were followed up to 2 month's postoperatively to find out any neurological and neurocognitive dysfunction and were consulted with neurophysician for further management.

Results

This study was carried out in the Department of Cardiovascular Surgery, NICVD. The results and observations of the study are being presented as follows: There were 60 patients. The Sixty (60) percent of the patients in On-pump group and 53.3% in Off-pump group were between 50 – 60 years of age. Nearly one-quarter (23.3%) of the patients in each group were between 40 – 50 years of age. Very few patients in each group were below 40 years of age or of 60 years and above. No significant variation was observed between groups in terms of age (50.17 ± 8.31 vs. 49.23 ± 7.99 years, p = .659). It was found that there is also no significant difference between two groups. The groups were almost homogeneous in terms of sex as well (p = 0.306). Risk factors considering in both groups A and Group-B patients are hypertension, diabetes, smoking, hyperlipidemia and old MI, more than 50% of the patients in both groups were diabetic, hypertensive and hyperlipidemic and more the 60% patients of both groups had old MI. Less than 40% of both groups were smoker. So there was no significant difference in the presence of risk factor among the groups.

In pre-operative echo cardiographic study left ventricular ejection fraction were studied in all patients. LVEF was divided into two groups. One was more than 50% and other was less than 50%. In group A more than 18 (60%) of the patient had LVEF <50 and 12 (40%) had LVEF>50. In Group-B 16 (54.4%) patient had LVEF < 50 and 14 (46.6%) patient had LVEF > 50. But there was no significant difference in LVEF among the groups. Coronary angiogram of all the 60 patients in both group revealed significant stenosis of double vessel in 4 (13.3%) patients, triple vessel stenosis in 26 and left main in 7 patients in group A and double vessel disease in 10 (33.3%) patients triple vessels disease in 20 patients and left main disease in 3 in group B.

In On-pump group nearly half 46.6% of the patients needed 3 grafts followed by 26.7% patients 2 grafts and the rest 26.7% cases 4 grafts, where as in Off-pump group 56.6% of the cases required 3 grafts, 30% cases 2 grafts and 13.3% cases 4 grafts. The groups were found to be homogenous with respect to number of grafts needed (p = 0.055).

In group A, Two-third (60%) of the cases had their aorta cross-clamped for 60 minutes or more, while the rest one-third (40%) for less than 60 minutes during operation. The mean ACCT was 67.54 minutes and the lowest and highest ACCT were observed to be 51 and 107 minutes respectively. 66.7% of the cases had ECCT less than 100 minutes and the rest 33.3% 100 minutes or more. The mean ECCT was 95.6 minutes and the minimum and maximum ECCT were 84 and 202 minutes respectively.

Total operation time-Comparison of the outcome shows total operation time was 352.67 ± 50.61 minutes in group A and 311.47 ± 44.86 minutes in group B. There is significant difference between two groups. (Table-1).

Table-I

Comparison of total operation time in both group

Group-A	Group-B	P-value
352.67 ± 50.61	311.47 ± 44.86	0.0015

Data were analyzed using Student's t- Test and the difference was significant.

The ventilation time, postoperative ICU stay and hospital stay was significantly higher in the On-pump group than those in Off-pump group (19.4 ± 3.12 vs. 8.23 ± 2.92 hours, p < 0.001; 4.93 ± 1.01 vs. 4.03 ± 0.62 days, p < 0.001 and 11.27 ± 1.55 vs. 9.73 ± 1.89 days, p = 0.001 respectively). (Table-II)

Table-II

Comparison of outcome between groups

Outcome	Group		p-value
	On-pump	Off-pump	
Post Operative Ventilation time (hours)	19.40 ± 3.12	8.23 ± 2.92	< 0.001
Post Operative ICU stay (days)	4.93 ± 1.01	4.03 ± 0.62	< 0.001
Post Operative Hospital stay (days)	11.27 ± 1.55	9.73 ± 1.89	0.001

Data were analysed using Student's t-Test and presented as mean ± SD; level of significance was 0.05.

The Off-pump group (group-B) demonstrated a significantly better outcome in muscle tone and strength (13.3%) compared to On-pump (group-A) counterpart (40%) ($p < 0.05$).Reflexes were sluggish in 33.3% in group A and 16.7% in group B and difference was nonsignificant. (Table-III)

The early sensory function test demonstrated 100% normal outcome in Off-pump group, while the On-pump group had somewhat less normal outcome (93.3%). The groups were not found to be significantly different in terms of early sensory functions ($p > 0.05$). (Table-IV)

Table-V compares the late neurological assessment between groups. All the neurological functions like motor, sensory and reflexes were found 100% intact in both the groups.

Table-VI demonstrates the comparison of postoperative neurocognitive function using MINI Mental Score. On 3rd and 8th POD the MINI Mental Scores were found to be significantly lower in On-pump group than those in Off-pump group (22.0 ± 5.28 vs. 25.67 ± 3.34, $p = 0.002$ and 25.93 ± 3.11 vs. 26.63 ± 2.50, $p = 0.023$ respectively) suggesting that return of cognitive function following CABG in the OPCAB group is achieved much earlier than On pump group. By the end of the study period after (2 month) most of the patients had normal recovery. Only 2 patients in Group A had dysfunctional cognitive scores.

Table-III

Comparison of motor function impairment between the groups

Motor functionimpairment	Group-A (n=30)		Group-B (n=30)		P-value
	No	%	No	%	
Tone and strength	12	40%	4	13.3%	0.02
Reflexes	10	33.3%	5	16.7%	0.136

Data were analyzed by Chi-Square test with Yates correction.

Table-IV

Comparison of early sensory function impairment between the group

Sensory functionimpairment	Group-A (n=30)		Group-B (n=30)		P-value
	No	%	No	%	
Pain and touch	2	6.7%	0	0%	0.246

Data were analyzed by Chi-Square test with Yates correction.

Table-V

Neurocognitive function between the groups on 3rd post operative day, 8th post operative day and 2 months after operation.

NeurocognitiveImpairment	Group-A (n=30)		Group-B (n=30)		P-value
	No	%	No	%	
3rd post operative day					
Orientiation	8	26.6%	4	13.3 %	0.55
Antegrade memory	4	13.3%	2	6.6 %	0.60
Attention	24	72%	12	40 %	0.05
Recall	16	53.3%	10	33.3 %	0.05
Language	11	36.6%	5	16.6 %	0.045
8th post operative day					
Orientiation	5	16.6%	4	13.3 %	0.689
Antegrade memory	2	6.6%	0	0 %	0.5
Attention	18	60%	10	33.3 %	0.0549
Recall	13	43.3%	8	26.6 %	0.47
Language	7	23.3%	2	6.6 %	0.49
2 months after operation					
Orientiation	0	0%	0	0 %	
Antegrade memory	0	0%	0	0 %	
Attention	6	20%	0	0 %	0.4
Recall	4	13.3 %	0	0 %	
Language	0	0%	0	0 %	

Data were analyzed by Chi-Square test with Yates correction.

Discussion

This study was performed in NICVD, Dhaka. Included 60 patients of them 56 were male and only (four) were female. Total male female ratio being 93.3% male and only 6.7% female. The patients were divided into two groups. Group A includes CABG (on pump) and Group B includes OPCAB. There was slightly higher percentage of female in Group A (10%) than in Group B (3.3%).

In Group-A the age ranged from 32 to 70 years with a mean ± SD of 50.166 ± 8.31 years. The majority of the patients are in the age group of 50-60 years. In Group-B the age ranged from 32 to 67 years with a mean ± SD of 49.23 ± 7.99 years, majority of the patients are in the age range of 50 to 60 years. So there is no significant difference in age among the groups. But there is a definite male predominance in both the groups as the incidence of coronary artery disease is higher in male.

Risk factors considering in both groups A and Group-B patients are hypertension, diabetes, smoking, hyperlipidemia and old MI, more than 50% of the patients in both groups were diabetic, hypertensive and hyperlipidemia and more the 60% patients of both groups had old MI. Less than 40% of both groups were smoker. So there was no significant difference in the presence of risk factor among the groups.

In pre-operative echo cardiographic study left ventricular ejection fraction were studied in all patients. LVEF was divided into two groups. One was more than 50% and other was less than 50%. In group A more than 18 (60%) of the patient had LVEF<50% and 12 (40%) had LVEF<50. In Group-B 14 (46.6%) patient had LVEF>50% of 16 (54.4%) patient had LVEF > 50. But there was no significant difference in LVEF among the groups.

The development of coronary angiography by Manson Sones and Shirey was the Landmark achievement that permitted precise definition of the anatomic obstruction and laid the foundation for coronary artery by pass surgery.[11] Coronary angiogram of all the 60 patients revealed significant stenosis of double vessel-4 (13.3%) patents, triple vessel in 26 (86.6%) patents and left main in 7 (23.1%) patients in Group-A and in Group-B, double vessel 10 (33.3%) patents, Triple vessel 20 (66.6%) patients and left main 3 (10%) were present. All the stenosis vessels were graft table.

The number of grafts need in both the groups were for on pump group nearly half 14 (46.6%) of patients required 3 grafts, 8 (26.6%) patients required 4 grafts and 8 (26.6%) patients required 2 grafts, where as in off pump group-17 (56.7%) patients needed 3 grafts, 9 (30%) patients needed 2 grafts and 4 (13.3%) patient needed 4 grafts. So the groups were found to be homogenous with respect to the number of graft required. So there is no significant difference among the groups.

The Aortic Cross clump time (ACCT) and Extra corporeal Circulation time (ECCT) was recorded only for on pump group. So only the distribution of patients were studied in the group. With respect to ACCT patient were divided in two groups. Patient ACCT required more than 60 minutes and less than 60 minutes. 18 (60%) patients required 60 minutes or more while 12 (40%) patient needed less than 60 minutes. The range was 51 minutes to 107 minutes mean was 67.54 minutes with respect of ECCT 20 (66.7%) patient need less than 100 minutes and rest 10 (33.3%) required more than 100 minutes range was 84 to 202 minutes with mean of 95.6 minutes.

The incidents of cerebral dysfunction after cardiac surgery with CPB varies over a wide range from 4 to 70%. These variability is due to several difference in CPB, surgical and anesthetic technique.[12] In a study of 100 patient in whom a 37% incidents of neurologic dysfunction had been diagnosed by a careful neurological examination by kalter and his colleagues.[5] In a study done by Diedderik and his colleagues, there was some substantial neurocognitive dysfunction after cardio pulmonary bypass surgery in the early post-operative period which was less marked in off-pump procedure.[9] Study done by Gorlitzer and his colleagues found that cognative brain dysfunction is an significant adverse event related to on-pump coronary artery bypass surgery (20% to 80%) which may affect length of hospital stay, quality of life, the rehabilitation process and work performance.[10]

Total operation time in Group A and Group B was studied and compared among the groups and there was difference in the total operation time. 352.67 ± 60.61 minutes in Group A and 311.47 ± 44.86 minutes in Group B was recorded, which was significant.

The post operative ventilation time (hour) ICU stay (days) and total post operative hospital stay (days)

were studied and compared among the groups. All of them shows significantly higher in the On pump group than those in off pump (19.4 ± 3.12 VS 8.23 ± 2.92 hours, 4.93 ± 1.01 VS 4.03 ± 0.62 days, 11.27 ± 1.55 VS 9.73 ± 1.89 days, respectively).

The incidence of post operative cerebral complications following coronary artery bypass surgery widely depends on the study design, methods and criteria used to assess neurologic injury and timing of follow up examination, type of cardiac surgical procedure.[13]

Neurophysiological and neuro cognitive function were assessed prior to intended operative procedure. Neurophysiological and neuro-psychometric tests were done and a base line was set. Patients with abnormal neurological or neuropsychometric function were excluded from the study.

Post operative neurophysiological functions are divided into motor and sensory function. Motor function is assessed by muscle tone, strength and reflexes. Sensory function is tested by pain and touch sensation. They were grouped in early includes 3rd and 8th post operative and late that is after 2 month.

In the early motor function test the off pump group demonstrated a significantly better outcome in muscle tone and strength (13.3%) compared to on pump (40%). Reflexes were sluggish in (33.3%) in Group A and (16.3%) in Group B and difference was non-significant.

In early sensory function test demonstrated 100% normal outcome in off pump group, while the on pump group had somewhat less normal outcome (93.3%). The groups were not found to be significantly different in terms of early sensory function.

The neurologic dysfunction after CPB range from 1% to 9% of stroke, 3% to 4% alter mental status and 24% to 40% of neuropshycometric deficits.[15]

In late nurophysiological assessment between the groups all the functions like motor, sensory and reflexes were found 100% intact.

Neurocognitive function between the groups demonstrates the comparison of postoperative neurocognitive function using Mini Mental Score Examination on 3rd, 8th post operative day and after 2 months post operatively. On 3rd and 8th post operative days Mini Mental Score were found to be significantly lower in on pump groups than those in off pump group (22.0 ± 5.28 vs 25.67 ± 3.34 and 25.93 ± 3.11 vs 26.63 ± 2.50 respectively). After 2nd month post operative period Mini Mental Score Examination shows much improved in cognitive function in both groups. 28.63 ± 1.94 in on pump groups and 29.30 ± 0.99 (almost nil) in off pump group.

From the study we found that on the 3rd and 8th post operative days the neurocognitive dysfunction occurred in both the groups but significantly higher in on pump then OPCAB group. After 2 month only 6.6% patients were found dysfunctional in on pump group where as none was found dysfunctional in OPCAB group.

In a study done by Dvan and his colleagues there was some early neuropsychometric dysfunction found in both on pump and off pump groups which was significant. But in the late cognitive function there was no impairment in both the groups which is more or less similar to my study results.

By the end of the study period after (2 month) most of the patients had normal recovery. Only 2 patients in Group A had dysfunctional cognitive scores. This (6.6%) dysfunction result is similar to that of Slogoff and his colleagues.[14]

A much larger study focusing on these will help to determine the statistical significance of these observations.

Conclusion

This study has convincingly shown cardio-pulmonary bypass (CPB) has had detrimental effect on neurological function. There is a higher incidence of neurocognitive dysfunction in on pump CABG than OPCAB. The difference is highly significant when similar age groups were compared in early post operative period.

Neuropsychometric abnormalities often remain unrecognized. This study helped in establishing the extent of the problem which can be minimized.

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Clinical Study and Cost Effective Diagnosis of Pre labour rupture of Membrane (PROM) in Sir Salimullah Medical College & Mitford Hospital, Dhaka

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Abstract

Background information: *Under normal circumstances the fetal membranes rupture during the active phase of labour that is during the end of 1st stage or the beginning of 2nd stage of labour. In obstetric ward very often pregnant women present with fluid leakage per vagina. Sometimes there arise difficulty in diagnosis of patients. Accurate assessment of membrane rupture is very essential because of increase risk of complications to both mother and neonate and plan of management of patients with PROM. This study aims to detect the actual incidence of PROM among the study group, determination of the effectiveness of current diagnostic procedures, maternal and fetal outcome in patients with PROM and thus help us in our management policy in pregnant women with PROM.*

Materials and Methods*: Hundred pregnant patients with PROM were selected out of 300 cases for the study between January, 2004 to December, 2004. This is a prospective observational study where 100 patients presenting with fluid leakage per vagina were selected by random selection for bedside diagnosis and ultimate incidence of PROM and clinical study of this patients were done.*

Results : *Incidence of PROM in this study was 9.42%. Among these patients term PROM was 64% and preterm PROM was 36%. Age of the patients ranged between 15-39 years, with peak incidence in the age group of 20-29 years. 56% of the patients were on regular antenatal checkup. Among 315 women complaining of PROM 300 (45.24%) women were actually diagnosed as pregnancy with PROM. Clinical examination, nitrazine test, fern test and USG evaluation was done for detection of cases. Most of the patients were primigravida (57%) and multigravida were 43%. In this study 66% of patients with PROM developed labour pain within 24 hours and 12% developed labour pain within 48 hours, 22% had no labour pain. Among these 100 patient 52% were delivered by normal vaginal delivery (spontaneous, induced or augmented) and 48% were delivered by LSCS. Among primi gravida LSCS rate was (59.65 %) greater than among multi gravida (32.55%). 12% of the patients developed chorioamnionitis and 9% patients had puerperal sepsis.*

Keywords: Pre labour rupture of membrane, Diagnosis, Cost effective.

(Sir Salimullah Med Coll J 2017; 25: 19-22)

Introduction

PROM is a significant occurrence as it can cause maternal morbidity in the form of sepsis and increase incidence of operative delivery. It can predispose the mother to serious infections such as chorioamnionitis, endometritis, bacteriamia and puerperal sepsis[1]. It is responsible for 30% of all preterm deliveries[2]. Pre-labour rupture of membrane is defined as spontaneous rupture of the chorioamnion before the onset of uterine contractions[3]. The membrane may rupture either at term that is after 37 completed gestational weeks, called term PROM or before 37 completed gestational weeks, when it is called preterm PROM. In obstetrics ward very often pregnant women present with leakage of fluid per vagina. Accurate assessment of membrane rupture is very essential because of increased risk of complications with PROM and plan of management of patients with PROM. The present study aims to detect the actual incidence of PROM in total study population and its bedsides diagnose among the patient presenting with fluid leakage per vagina and its effect on maternal outcome. So that we can give more attention to the correct diagnosis and management of PROM to reduce mortality and morbidity caused by it.

Material and Method

This is a prospective observational study carried out in the dept. of Gynae & Obs in SSMC MH during the period of January 2004 to December 2004 where 100 patients presenting with fluid leakage per vagina were selected for bedside

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diagnosis and ultimate incidence of PROM and clinical study of this patients. Patients were selected by random selection. After admission of patients complete history including duration of pregnancy, time and onset of rupture of membranes, past obstetric history, any past gynaecological procedure was recorded. Gestational age was determined from LMP and from early USG recording. For diagnosis of PROM, patients history, sterile speculum examination, nitrazine test and fern test was done. Following diagnosis mode of delivery was observed among these patients, were managed either expectantly or in aggressive way. Plan of management depend on cervical condition, duration of membrane rupture, gestational age, presence of fetal distress or chorioamnionitis. Maternal outcome were observed.

Results

Table-I

Diagnosis of the patients complaining of PROM (n=315)

Procedure	No. of Patients	Percentage
Clinical examination showing evidence of fluid coming out of cervical os	305	96.82%
Nitrazine test positive	300	98.36%
Ferm test positive	301	95.55%
USG showing evidence of less fetal amniotic fluid	300	98.36%

Table I shows that 315 of pregnant patients came with the complain of fluid leakage per vagina. Among these patients 300 patients showed nitrazine test positive and 301 patients showed fern test positive. USG showing absent or less amount of amniotic fluid in 300 patients.

Table II

Incidence of PROM among the study population (n=3184)

Diagnosis	Number of Patients	Percentage
PROM with > 37 gestational weeks	192	6.03 %
PROM with 34 - 37 gestational weeks	81	2.54 %
PROM with < 34 gestational weeks	27	.85%
Total	300	9.42 %

The incidence of PROM was 9.42 %. Among the patients with PROM, term PROM was 192 and pre term PROM was 108.

Table III

Relation of PROM with parity (n=100)

Previous obstetrics history	Number of patients	Percentage
Primi	57	57%
Multi	43	43%
Total	100	100%

Table IV

Time of spontaneous onset of labour pain after PROM (n=100)

latent period	Number of patients	Percentage
24 hours	66	66%
25-48 hours	12	12%
>48 hours	08	08%
No spontaneous labour pain	14	14%
Total	100	100%

Table IV : Shows that 66% of patients with PROM had developed labour pain within 24 hours of PROM. 12% had labour pain within 48 hours, 14% patients had no labour pain within one week and were on conservative management for more than a week.

Table V

Interval between PROM and delivery (n=100)

Duration between PROM and delivery	Number of patients	Percentage
<12 hours	34	34%
12-24 hours	30	30%
25-48 hours	14	14%
>48 hours	22	22%
Total	100	100%

Table V : Shows that 34% patients with PROM were delivered within 12 hours of PROM, 30% patients were delivered within 24 hours of PROM, 24% of patient were nor delivered within 48 hours and these patients were on conservative management mostly.

Table VI

Distribution of mode of delivery with parity (n=100)

Mode of delivery	Primi gravid (n=57)	Multigravida (n=43)
Normal vaginal delivery (52)	23(40.35%)	29(67.45%)
Caesarian section (48)	34 (59.65%)	14 (32.55%)
Total (100)	Primi 57	Multi 43

Among the primigravida patients 40.35% were delivered by vaginal delivery and 59.65% were delivered by caesarian section. Among the multigravida patients 67.45% were delivered by vaginal delivery and 32.55% were delivered by caesarian section.

Table VII

Incidence of maternal morbidity (n=100)

Morbidity	No. of patients	Percentage
Maternal morbidity present	35	35%
Puerperal sepsis	09	09%
Postpartum haemorrhage	05	05%
Chorioamnionitis	12	12%
Retained placenta	06	06%
Wound infection	03	03%
No maternal morbidity	65	65 %
Total		100%

Table VII shows that there were increased incidence of maternal morbidity in patient with PROM in the form of chorioamnioitis (12%), puerperal sepsis (9%).

Discussion

In this study incidence of PROM is 9.42% which reflects the incidence of PROM in a referral hospital. Out of this 54% was term and 36 % was preterm PROM. But this does not reflect the exact incidence of PROM in whole nations due to difference in referral system, health facilities and awareness of patients. A wide range of epidemiological survey is needed to find out the actual incidence of PROM in our country. The incidence here also correlate with other studies done previously that PROM affects 2.7% to 17% of all pregnanciest[4] Dr. Saria Tasnim in her study done in 1995 at DMCH showed hospital incidence of PROM is 8.12%[5] . In this study not all women complaining of fluid leakage per vagina was diagnosed actually as having PROM. There may be hydrorrhea gravidarum. Among 315 women complaining of PROM 300 (95.24%) women were actually diagnosed as pregnancy with PROM. Clinical examination, nitrazine test, fern test and USG evaluation was done for detection of cases.

In this study incidence of PROM is more in primigravida patient (57%) which is similar to study of B. Afrinav[6] . But Begum and Chowdhury showed 70% incidence in multigravida patient. This discrepancy may be due to the fact that more of the primigravida patients were admitted into hospital for complication of pregnancy and multigravida patient are delivered in home in great proportion.

In this study 66% of PROM patient developed labour pain within 24 hours of occurrence of PROM and 64% were delivered within 24 hours. 12% delivered labour pain within 48 hours. 22% had no pain within 48 hours of occurrence of PROM and responded with conservative management. Tasnim in her study showed that 65% patients develop labour pain within 24 hours of PROM. In a study at the University of California Loss Angeles (UCLA) it was found that labour started within 24 hours of PROM, in 81% of patients carrying babies larger than 2500gmw[7].

In this study among the 100 patients 52% were delivered by normal vaginal delivery either

spontaneously, induced or augmented. 48% were delivered by caesarian section. Among the primigravida caesarian section rate (59.65%) was greater than vaginal deliveries (40.35%).

In this study group 35% showed maternal morbidity and 65 % showed no maternal morbidity. Among the first group chorioamnionitis was highest 12%. There were also puerperal sepsis 9%. Infection appears to be both a cause and consequences of PROM and is related to preterm delivery. Antibiotic therapy is of importance in the management of patients with PROM both for prophylaxis against maternal and neonatal infection and for treatment of overt infection. The goal of antibiotic therapy is to reduce maternal and fetal infectious morbidity and to delay the latent period between the rupture membrane and the onset of preterm labour[8]. There is a relationship between neonatal infection and development of cerebral palsy and neoro-developmental impairmenty[9,10]. The overall incidence of chorioamnionitis ranges from 4.2% to 10.5%[11] in an epidemiological study.

Conclusion and recommendation

PROM has a wide spectrum of research area. In developed countries research are going on to find out the risk factor for PROM, maternal and fetal outcome of PROM, best possible, diagnosis and most effective decision regarding management of both mother and neonate. However we have few studies regarding incidence, risk factor, maternal and fetal outcome of PROM. Earlier diagnosis and optimum obstetric management may reduce the incidence of this mortality and morbidity. A large scale community based study on PROM to know its actual incidence in our country and its impact on maternal and neonatal health should be carried out in future.

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Mean Corpuscular Volume and Mean corpuscular Hemoglobin Concentration in Hemolytic Anemic Patients with and Without G-6PD Enzyme Deficiency

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Abstract:

Background: *Erythrocyte G-6PD enzyme deficiency is an important cause of Hemolytic anemia with consequent increase MCV and decrease MCHC.*

Objectives: *To assess the MCV and MCHC in Erythrocyte G-6PD enzyme deficient with hemolytic anemia in order to find their status.*

Methods: *The cross sectional study was carried out in the Department of physiology,BSMMU, Dhaka from July 2008 to 2009 to observe the MCV and MCHC in patient with hemolytic anemia. For this, total number of 50 hemolytic anemic patients (Groups-B) with age ranged from 5 to 30 years of both sexes was studied. Among them,25 were without G-6PD deficient hemolytic anemia(B_1) and 25 were hemolytic anemia with G-6PD deficiency(group-B2).Age and sex matched 30 apparently healthy subjects with normal blood G-6PD were included to observe baseline data (Group-A)and also for comparison. All the subject were selected from out Patient Department of Hematology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. Blood erythrocyteG-6PD enzyme level, MCV and MCHC were measured by standard laboratory techniques. Analysis of data was done by unpaired Student't' test.*

Results: *MCV was significantly higher in Group B_2 vs. Group A and also Group B_1 which was statistically significant. MCHC was significantly lower in Group B_2 vs. Group A and also Group B_1 which was statistically significant.*

Conclusion: *From this study, it may be concluded that, increased hemolysis of RBC with high MCV and low MCHC occur in G-6PD deficient hemolytic anemic patients which may be membrane defect.*

Key words: *Mean Corpuscular Volume, Mean Corpuscular Hemoglobin Concentration, G-6PD enzyme, Hemolytic anemia.*

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Introduction:

Erythrocyte G-6PD enzyme deficiency is one of the enzyme deficits disorder and is an important cause of anemia[1]. Acute hemolytic crisis may occur in G-6PD enzyme deficiency due to some oxidative stress, such as intake some anti–malarial drugs,ingestionof Feva beans, various types of bacterial & viral infection[2,3]. Hemolysis of RBC may occur even without prior administration of drugs in G-6PD enzyme deficiency [4,5]. It can also lead to life threatening hemolytic crisis in childhood and advanced age by interacting with specificdrugs[6]. Hemolytic anemia induced by drugs is more common in patients with erythrocyte G-6PD enzyme deficiiency[7]. Erythrocyte enzyme concentration has been significantly lowered in hemolytic anemia suffering from any type of infection[8]. Again, when erythrocyte G-6PD enzyme eficiency its present usually more marked hemolysis occurs in this group of anemic patients[9]. On the other hand, oxidative stress, ingestion of certain drugs also causes marked hemolysis in similar group of enzyme deficient patients with hemolytic anemia[10].

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Various hematological changes occur in hemolytic anemia without and with G-6PD enzyme deficiency including MCV; MCHC which depend on the integrity of its membrane[11].Workers of different countries reported that MCV was increased in hemolytic anemia with G-6PD enzyme deficiency. On the contrary, MCV has been found to be decreased in drug induced hemolytic anemia associated with G-6PD enzyme deficiency[13]. Again, a normal MCV has also been observed in similar group of patients[14]. However, the common clinical consequences of this enzyme deficiency are neonatal jaundice and sporadic hemolytic crisis[9].

Hemolysis of RBC is evidenced by decreased MCHC. The MCHC has been decreased in G-6PD enzyme deficiency hemolytic anemia associated with viral hepatitis[15].On the other hand, the MCHC has been decreased in drug induced hemolytic anemic patients[16].on the contrary, normal MCHC has also been reported[17].

In Bangladesh, many people are suffering from hemolytic anemia due to erythrocyte G-6PD enzyme deficiency. Unfortunately, most of them are treated without knowing the underlying cause.

In our country, there is lack of adequate information about deficiency of erythrocyte G-6PD enzyme in the hemolytic anemic patients and a few published data regarding the effects of erythrocyte G-6PD enzyme deficiency patients are available in our country[18, 19] and also from other countries[14, 15].

Therefore, the present study was under taken to MCV along with MCHC in hemolytic anemic patients without and with erythrocyte G-6PD enzyme deficiency. The outcome of the study may be helpful to create awareness among the clinicians about the needful in avoiding various complications due to this deficiency in hemolytic anemia

Methods

the present cross-sectional study was carried out in the Department of Physiology, BSMMU, Dhaka from July 2008 to 2009. For this, a total number of 80 subjects with age range from 5 to 30 years of both sexes were included. Among them, 50 patients were included. Among them, 50 patients with hemolytic anemia were included in Group B_1.On the basis of G-6PD enzyme level subject B were further divided into Group B_1, consisted of 25 patients without this enzyme deficiency and Group B_2 consisted of 25 patients with this enzyme deficiency .Age and sex matched 30 apparently healthy subjects with normal blood G-6PD enzyme level were taken to observe the baseline data (control) and also for comparison (Group-A). All the G-6PD enzyme deficient and non deficient patients were selected from personal contact. Patients with acute hemolytic episode or receive blood transfusion in the last 2 months and the thalassemia trait were excluded from the study. For all the subject, G-6PD enzyme level, MCV and MCHC were measured. Erythrocyte G-6PD enzyme level was determined by Spectrophotometric method[20]. Calculation of MCV and MCHC were done by Hemoglobin,total count of RBC and packed cell volume. Hemoglobin concentration was determined by standard procedures of cyanmethehemoglobin method and the result was obtained by colorimetric measurement of color reaction with an absorbance maximum at 530 nm wave length[21]. Total count of RBC was determined by hemocytometry which is done by under microscope. Packed cell volume was determined by macrohaematocrit which is done by centrifugation of anticoagulated blood at a standard speed and the result was obtained by calculating the fraction of red cell column of the whole blood[22]. All of these tests were done in the Departmen of Hematology,BSMMU,Dhaka. Data were expressed as Mean±SE. Statistical analysis of the results were done by unpaired Student "t "test by using SPSS program version 12.

Results

Mean erythrocyte G-6PD enzyme level was significantly ($P<0.001$) lower in G-6PD enzyme deficient group (G-6PD enzyme deficiency) than that of healthy control(Group A) and hemolytic anemia without G-6PD enzyme deficiency (Group B1).Again, this enzyme level was within normal range in Group B1 and the difference of this value statistically healthy control was also significant ($P<0.001$). (Table-I).

The MCV was significantly ($P<0.001$) higher in G-6PD deficient (Group B_2) in comparison to those of healthy control. On the other hand, though MCV was lower in Group B_1 than those of Group A but the differences were not statistically significant (table-II).

The MCHC was significantly ($P<0.001$) lower in hemolytic anemia with (Group B_1) and without (Group B_1) G-6PD enzyme deficiency compared to that healthy control(Group A). Again, this MCHC was significantly lower in Group B_2 than that of Group B_1(Table-III).

Table-I

Erythrocyte Glucose-6 Phosphate Dehydrogenase Enzyme levels in different groups of subjects (n=80)

Groups	n	RBC level (Mu/10^9erythrocyte) Mean(±SE)
A	30	119.79±1.69 (101.60-140.20)
B_1	25	130.42 ±2.80 (109.00-168.30)
B_2	25	41.28±3.99 (16.40-91.10)

Statistical Analysis

Groups	df	t value	P value
A vs B	53	-5.01	<0.001
***A vs B_2	53	18.76	<0.001
***B_1 vs B_2	48	-18.30	<0.001***

Data were expressed as mean ± SE. Figures in parenthesis indicate ranges.
Group A: Apparently healthy subject
Group B_1:Hemolytic Anemia without G-6PD deficiency
Group B_2: Hemolytic Anemia with G-6PD deficiency

Table-II

Mean Corpuscular volume in different groups of subjects (n=80)

Group	n	Mean(±SE)
A	30	93.46 ± 85 (80.00-102.17)
B_1	25	84.07 ±.1.08 (75.00-94.87)
B_2	25	106.74 ± 10.19 (71.43-33.33)

Statistical Analysis

Groups	df	t value	P value
A vs B	53	-1.42	<0.10^{NS}
*** A vs B_2	53	- 6.92	<0.001**
*** B_1 vs B_2	48	- 2.21	<0.001***

Data were expressed as mean ± SE. Figures in parenthesis indicate range
Group A: Apparently healthy subject
Group B_1: Hemolytic Anemia without G-6PD deficiency
Group B_2: Hemolytic Anemia with G-6PD deficiency

Table-III

Mean corpuscular Hemoglobin concentration in different groups of subjects (n=80)

Groups	n	MCHC(g/dl) Mean(±SE)
A	30	31.2 ±.02 (2. ±86-3.52)
B_1	25	27.1 ±.11 (88-.50)
B_2	25	22.9±,03 (2.00-2.64)

Statistical Analysis

Groups	df	t value	P value
A vs B	53	23.59	<0.001***
***A vs B_2	53	4.10	<0.001***
***B_1 vs B_2	48	3.72	<0.001***

Data were expressed as mean ± SE. Figures in parenthesis indicate ranges.
Group A: Apparently healthy subject
Group B_1: Hemolytic Anemia without G-6PD deficiency
Group B_2: Hemolytic Anemia with G-6PD deficiency

Discussion

The patients with G-6PD enzyme deficiency had significantly lower MCHC in comparison to those of healthy control. These findings are consistent with those of some investigators of different countries[23]. On the other hand, MCHC had significantly lower in patients without G-6PD enzyme deficiency than that of healthy control. These findings had also been reported by some other group investigators[24].The MCHC had significantly lower in patients with and without G-6PD enzyme deficiency due to excessive destruction of affected erythrocyte[25].

In this study, MCV was significantly higher in Erythrocyte G-6PD enzyme deficient hemolytic anemic patients than that of apparently healthy subject; similar observations were also reported by other workers[24].

Again, this MCV was also significantly higher in Erythrocyte G-6PD enzyme deficient hemolytic anemic patients than that of non deficient group and lower MCV was observed in hemolytic anemia without Erythrocyte G-6PD enzyme deficiency. Similar observations were also reported by other workers[25].

Changes in red cell membrane integrity may be the possible cause of early destruction of RBC in G-6PD enzyme deficient in hemolytic anemia[26].It has been suggested that abnormal degradation of hemoglobin may occur in G-6PD enzyme deficient hemolytic anemia[27]. Disturbance of intracellular metabolism may of also be the another possible underlying cause in this type of hemolytic anemia[16].

The MCHC had significantly lower in patients with and without G-6PD enzyme deficiency due to excessive destruction of affected erythrocyte[28-29]. The MCV was significantly higher in Erythrocyte G-6PD enzyme deficiency compared to that of non deficient hemolytic anemia. It is consistent with other investigators[29]. The higher MCV in Erythrocyte G-6PD enzyme deficiency might be due to shorten red cells life-span, abnormal membrane protein & depression of bone marrow. Extensive studies on the occurrence of severe anemia in Erythrocyte G-6PD enzyme deficient patients indicate that such erythrocyte are prone to rapid and easy destruction by reticuloendothelial system. Abnormal degradation of hemoglobin, disturbances in intracellular metabolism or changes in membrane integrity is the possible underlying causes of early destruction of Erythrocyte G-6PD enzyme deficient erythrocyte in hemolytic anemia. Erythrocyte depends upon the pentose monophosphate shunt for the production of energy to drive various associated cell processes and Erythrocyte G-6PD initiates this pathway. A deficiency of this enzyme leads to lower level of reduced hemoglobin, glutathione or NADPH.As a result, intracellular stability of the affected erythrocytes may be impaired due to disturbances metabolism and such cells undergo destruction more rapidly than normal cell. In addition, it has also the lower level of reduced glutathione Erythrocyte G-6PD enzyme deficiency erythrocytes limit their ability to resist oxidative stress and leads to premature destruction. In present study, a comparative evaluation of hematological indices occurrence of significant anemia in deficient group. though the exact mechanism involved for this markedly increased hemolysis is not clear, it appears to be due to changes in the erythrocyte membrane permeability is most likely to be the cause of hemolysis as evidence higher MCV which due to excess hemolysis.Again Erythrocyte G-6PD enzyme is essential for maintain of the integrity of red cell membrane. Erythrocyte G-6PD enzyme deficiency might lead to more hemolysis. This is supported by markedly lower level in hemolytic anemic Erythrocyte G-6PD enzyme deficiency.

All the above mentioned suggestions may also be the underlying cause of excess hemolysis of RBC in the G-6PD enzyme deficient hemolytic anemic patients of present series. But it is difficult to comment on all the above mentioned factors as they were not studied.

Conclusion

Therefore, this study concludes that in G-6PD enzyme deficiency, excess hemolysis of RBC occur possible due to membrane defect.

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Pattern of Gross Congenital Malformations and their Neonatal Outcome in a Tertiary Care Hospital of Dhaka city

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Abstract

Background: *Gross congenital malformations are structural anomalies present at birth which has a significant effect on morbidity and mortality of infants.*

Objective: *To determine the pattern of gross congenital malformations and their outcome during neonatal period.*

Materials and Methods: *This cross-sectional study was done in the neonatology ward of Dhaka Shishu (children)Hospital, Dhaka, Bangladesh on 408 neonates enrolled from November 2014 to October 2015.Diagnosis of congenital malformation was based on clinical evaluation of neonates by experienced pediatricians and followed up to their neonatal period(30 days of age).*

Results: *A total of 408 neonates were subjected to full clinical examination. The malformed neonates were classified into 06 groups according to the system affected using World Health Organization (WHO) classification of congenital malformations. The anomalies found in descending order are: central nervous system 5(35.71%), cleft lip and cleft palate 2(28.57%), gastro-intestinal system 1(7.14%), ear, face and neck 1(7.14%) and more than one system affected 4(28.57%).The number of death among the malformed neonates was 3(21.41%).*

Conclusion: *Surveillance and monitoring of congenital malformations is important for identifying pattern of anomalies and neonatal outcome.*

Key words: *Malformation, Neonates, Congenital.*

(Sir Salimullah Med Coll J 2017; 25: 28-31)

Introduction

Congenital malformations are morphologic defects that originate in the prenatal period as a result of genetic mutation, chromosomal aberrations and/or adverse intra-uterine environment[1].The term "major malformations" subsumes all singular and combined structural defects, syndromes, sequences, and associations[2].The prevalence of major malformations has been variously reported as 3-4% of all neonates(in passive surveillance system) or 6-8% of all neonates(in active surveillance system). Approximately one fifth of all such malformations are severe and life threatening[3,4,5].Congenital malformations are a major public health issue, and the quality of their treatment is an indicator of the quality of public health provision in general[4].According to international data, about 2-3% of babies are born with significant congenital birth defects[6].

Limited data are available on the incidence pattern and neonatal outcome of congenital malformations in Bangladesh. However, with improvements in the national strategies of newborn care in Bangladesh, the problem of congenital malformations and associated complications are emerging significantly. This study was, therefore, undertaken in a tertiary care hospital to determine the pattern of gross congenital malformations and their outcome in the neonatal period.

Materials and Methods

This prospective cross sectional study was carried out at Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh, on 408 neonates admitted in the neonatal ward from November 2014 to

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October 2015.According to World Health Organization (WHO) recommendations[7], every neonate was given a complete clinical examination by a qualified pediatrician to identify major congenital defects. A proforma was completed for every neonate, including clinical and anthropometric examinations and demographic data. Malfor-mations were classified into systems.

Results

Four hundred and eight neonates admitted in the neonatal ward of Dhaka Shishu (Children) Hospital were enrolled during the study period;14 had (Table-1) gross congenital malformations giving the prevalence of 3.43 of the neonates admitted with congenital malformations;8 (3.43%) were male and 6(3.14%) were female with a male to female ratio of 1.3:1.

Table-I

Congenital Malformations: Frequency and Sex

	Total Neonates	No of Malformed neonates	Percentage (%)of malformed neonates
Total admission	408	14	3.43
Male	217	8	3.68
Female	191	6	3.14

Table-II shows distribution and frequency of congenital malformations in relation to various fetal and neonatal factors: mean birth weight (kgs) of 2.28±0.42 SD with minimum 1.35kgs and maximum 3.6kgs; mean maternal age (years) of 23±5, minimum of 16 years and maximum of 38 years. Mothers of less than 20 years of age accounted for 64.28% babies with congenital malformations, while, those between 20 and 30 years had 28.56% babies with congenital anomalies. History of parental consanguinity was present in 9 cases of congenital malformations. Babies with congenital anomalies were highest in the multigravida (71.43%).

Table-II

Distribution of Congenital Malformations in relation to various fetal and maternal factors.

Characteristics	No. of cases per characteristic, N=14	of total %
Birth Weight (kgs):		
<2.5	7	50
2.5-3.5	5	35.71
>3.5	2	14.28
Gestational age at birth (weeks)		
<37	10	71.42
37-42	4	28.57
Maternal age(years)		
<20	9	64.28
21-25	3	21.42
26-30	1	7.14
31-35	1	7.14
Parity		
Primigravida	4	28.57
Multigravida	10	71.43

Table-III shows maternal birth characteristics and occurrence of congenital malformations: over 64% of the mothers who had babies with congenital malformations were seen in ANC (antenatal care) at third trimester, 57.14% were delivered vaginally and over 92.85% had no family history of birth defects.

Tabl-III

Maternal birth characteristics and congenital malformation

Characteristics	N=14 (100%) Malformation
ANC attendance:	
First trimester	1 (7.14)
Second trimester	4 (28.57)
Third trimester	9 (64.28)
Mode of delivery	
Spontaneous	8 (57.14)
Caesarean section	2 (14.28)
Instrumental	4 (28.57)
Family history of birth defect	
Yes	1 (7.14)
No	13 (92.85)

Table-IV shows the distribution of congenital malformation according to the organ /system involved; the highest occurrence being in the central nervous system with 5 cases(35.7%) and prevalence of 1.21. After initial stabilization, the malformed neonates were treated accordingly. Three (21.41%) of the malformed neonates died during the course of treatment, rest were discharged with relevant counseling and follow-up plan.

Table-IV

Distribution of congenital malformations

Category of malformation:	N=14 (%)	Prevalence
CNS		
Meningocele	3 (21.42)	0.73
Hydrocephalus	1 (7.14)	0.24
Anencephaly	1 (7.14)	0.24
Facial/Palatal Anomalies		
Cleft lip and palate	2(28.57)	0.49
Musculoskeletal system	1(7.14)	0.24
Anomaly Club foot		
Gastrointestinal Anomaly:		
Ano-rectal malformation	1 (7.14)	0.24
Ear, face and neck Anomaly:		
Choanal atresia	1 (7.14)	0.24
More than one Anomaly	4 (28.57)	0.98

Discussion

The present study indicates that congenital anomalies are important pediatric problem constituting a major proportion of total admissions in a tertiary care hospital. The prevalence of congenital anomalies of 3.4% observed in this study is higher than the findings of Obu et al [7] and Asindi et al [8], which were 2.8% and 2.2% respectively. The prevalence of the present study is close to that noted in Atlanta, USA (31/1000) among live births[9].

Our study has shown a male preponderance among congenitally malformed babies and this is in agreement with previous reports. [10, 11] There was a history of consanguineous marriages in 9(64.28%) cases in our study; facts from literature showed a definite increase in incidence of congenital malformations amongst babies of consanguineous marriages [12, 13].

In this study, it was observed that mothers with ages below 20 years had more babies with congenital malformations; however, some previous reports [13] showed no statistically significant association between maternal age and congenital malformations. Result of the present study is comparable to results of some other studies [7, 10, 13, 14] that showed a higher incidence of malformations among the babies of multigravid mothers; this probably indicates that there is a linear relationship between incidence of congenital malformations and increase in birth order. Mothers that were seen in antenatal care (ANC) only at the third trimester had the highest number of babies with congenital malformations: 10(71.43).It is therefore possible that either lack of ANC or delay in commencing ANC in the early periods of pregnancy when organogenesis begins, may have contributed to these observed higher number of malformations.

In this study, central nervous system abnormalities accounted for more of the observed congenital malformations in the babies studied with a prevalence of 1.21%, which is in keeping with other studies done previously [15, 16]. However, facts from other studies [17, 18] showed more occurrences in the gastrointestinal tract. In studies from Iran, musculoskeletal anomalies rank as the commonest [19, 20].An Indian study [21] reports CNS anomalies to be the most frequent. These differences in the pattern of distribution might be due to the paucity in investigative procedures such as karyotyping and aversion for autopsy in the study areas. In addition, all these are hospital based studies which may not reflect the overall status of the problem.

The proportion of neonatal deaths in malformed infants (21.41%) in our study was much higher than that in normal neonates (3.21%), which confirms that malformations are a major cause of neonatal death; this is in accordance with some other studies [2, 8].

Conclusions

Congenital malformations are a major cause of stillbirths and infant mortality. The study gives

an overview of pattern of congenital anomalies in a tertiary care hospital. By thorough clinical examination, the major congenital malformations must be identified, as early diagnosis and treatment for better chance of survival is desired. Surveillance and monitoring of congenital conditions is important for identifying pattern of malformations. A nationwide surveillance can recognize the disease burden and related risk factors. This will be helpful for strategic planning to improve the outcomes.

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Case Report

Secondary Amennorrhoea and Hematometra due to Cervical Stenosis As a Result of Genital Tuberculosis - A Case Report

Irin Parveen Alam[1], Shamsunnahar Begum Hena[2], Mohd Azharul Haque[3]

Abstract

A 25years old married nulliparous lady was diagnosed as a case of secondary amenorrhoea with hematometra. She had history of antitubercular therapy previously and secondary amenorrhoea was due to genital tract tuberculosis. Pelvic examination shows cervical stenosis and USG revealed hematometra. She was treated and subsequently was menstruating.

Keywords: *Amennorrhoea, Hematometra, Cervical Stenosis.*

(Sir Salimullah Med Coll J 2017; 25: 32-34)

Introduction

Secondary amenorrhoea is defined as absence of menstruation for more than three cycle, or 6 consecutive months in a previously menstruating woman. Female genital tuberculosis is an important cause of secondary amenorrhea and infertility in developing countries like Bangladesh where tuberculosis is endemic [1]. In 2007, the World Health Organization (Global Tuberculosis Control) stated that 92% of genital tuberculosis is secondary to lesions found in the lungs, lymph nodes, urinary tract, bones, or joints[2]. Genital tuberculosis frequently affects the fallopian tubes (95-100%) and the endometrium (50-60%).[3] Clinical presentations vary in nature. It may be asymptomatic. The common presentations are amenorrhoea, menstrual irregularities, infertility, vaginal discharges and postmenopausal bleeding.[3]

Case history

A 25yrs married nulliparaous developed secondary amenorrhea for 5 years and lower abdominal pain for 3 months. According to her statement she developed infrequent menstruation with scanty flow for 2 years followed by amenorrhoea for last 5 years. She had history of treatment for tuberculosis 7 years back with improvement of her general condition. She had no history of D&C or other intrauterine manipulation. She had USG several times which revealed negative result. Patient was anxious regarding her amenorrhoea and subfertility. She was treated by estrogen and progesterone but menstruation not established. Patient had an USG which revealed normal finding. After the next two months she developed abdominal pain which was cyclical and severe enough that she had USG again after three month and it shows collection in uterine cavity suggestive of hematometra. With this complain she was admitted in this hospital for better management. On examination she was mildly anemic, weight 50 kg, mild tenderness on abdominal examination. On pelvic examination cervix was apparently healthy but external os was absent and uterus was about 8 weeks size soft in consistency. Her thyroid hormone profile and serum FSH and LH was within normal limit. The patient underwent operation for cervical stenosis and a new opening was created by sharp stab over the external os and about 20cc chocolate colored old menstrual blood came out. A Foley's catheter was kept in situ for 7 days. She was then menstruating regularly for one year and now she is trying for pregnancy.

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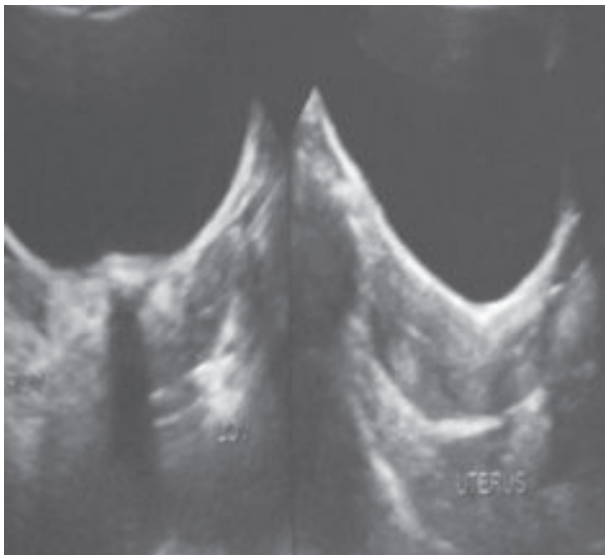

Fig.-1: *Previous USG*

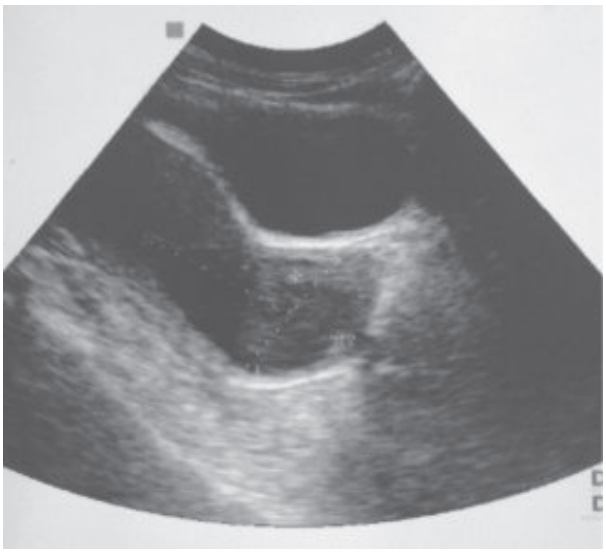

Fig.-2: *USG after hematometra*

Fig.-3: *cervical stenosis*

Fig.-4: *cervix after stab incision durinamenorrhoea*

Discussion

It has been estimated that about 5–10% of infertility are as a result of female genital tuberculosis and even this rate is higher among patients with tubal factor infertility (39- 41%) . Primary genital tuberculosis is extremely rare. In most series, a history of previous diagnosis or treatment for extra-genital tuberculosis is present in 25-50% of patients.[4] Tubercular endometritis can lead to development of intrauterine scars resulting in adhesions that can obliterate the cavity to a varying degree. Even with relatively few scars, the endometrium may fail to respond to estrogen. Often, patients experience secondary menstrual irregularities characterized by a decrease in flow and duration of bleeding (amenorrhea, hypomenorrhea, or oligomenorrhea).[5] The cases of tuberculous endometritis predominantly presented with secondary amenorrhoea and similar findings were reported by others. The study showed the cause of secondary amenorrhoea in cases of tubercular endometritis, attributing to end

organ failure by caseation, improper healing, scarring, severe fibrosis and adhesions.[6] The reported patient had previous history of antitubercular therapy, but she had no definitive evidence of pulmonary tuberculosis. She had low grade fever with raised ESR. But she noticed improvement of her physical condition after antitubercular treatment. Diagnosis of genital tuberculosis is difficult .There may have no history of tuberculosis or evidence of tubercular lesions elsewhere in the body. Abdominal and vaginal examinations may reveal normal findings. A high erythrocyte sedimentation rate and a positive Mantoux test are nonspecific, and therefore cannot provide an accurate diagnosis of genital tuberculosis. Chest X-rays are normal in most cases; however, pelvic ultrasound and hysterosalpingography examinations may help in the diagnosis. Histopathological evidence from biopsies of premenstrual endometrial tissue or the demonstration of tubercle bacilli in cultures of menstrual blood or endometrial curetting is necessary to provide a conclusive diagnosis of the disease[4,7] . Hysteroscopy is the gold standard for diagnosis of endomertial adhesion.[8] Imaging by sonohysterography or hysterosalpingography will reveal the extent of the scar formation. The typical feature of tuberculosis on histology is a caseating granuloma with or without Langhans' cells. Molecular biological testing by gene xpart aids in the presumptive diagnosis of endometrial TB. Definitive diagnosis is the detection of tuberculosis bacilli in endometrial specimen cultures. Because there is a false negative rate of approximately 10%, a negative endometrial biopsy in a symptomatic patient must be followed by a fractional curettage under anesthesia[9].

Hypomenorrhea and secondary amenorrhea widely seen in the patients with pulmonary tuberculosis may resulting from dysfunction to hypothalamus, pituitary, and premature ovarian failure or even due to organic lesions in the uterine endometrium[10]. The antigonadotrophic effect of Mycobacterium tuberculosis may be responsible for the menstrual irregularities that take place in cases of active pulmonary tuberculosis without genital tract lesions [11].

The reported patient after prolong amenorrhoea developed hematometra following regain of endometrial functional activity, but she developed cervical stenosis as a result of tuberculosis. Such history could not found in literature search. A case report was presented where pyometra developed as a result of cervical stenosis.[9] The patient will need laparoscopy and hysterosalpingography for further evaluation. Infertility is typically caused by pathology in the endometrium and fallopian tubes and dysfunction of menstruation is largely attributed to endometrial caseation [12].

Conclusion

There is a strong association between genital tuberculosis and secondary amenorrhea; and regaining of menstrual function following endometrial tuberculosis is rare. Therefore, every patient presenting with prolong amenorrhea should be evaluated for tuberculosis in areas where tuberculosis is endemic.

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