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A Ten-year Retrospective Study of Tetanus at a Teaching Hospital in Bangladesh

AHM FEROZ[a], MH RAHMAN[b]

Summary:

Aims: To study the demographic, clinical features, treatment as well as outcomes of tetanus patients in the Bangladeshi population from 1994 to 2003.

Design: A retrospective descriptive study. Setting: A large public Medical college hospital with a regional as well as referral service. Materials and Methods: All cases of tetanus in adult patients from January 1994 to December 2003 were identified from the medical record at the hospital and these were then retrospectively reviewed.

Results: A total of 80 cases of tetanus were seen at the Faridpur Medical college hospital in the 10 years period with a mean of 8 cases per year. There were 55 male (68.75%) and 25 female (31.25%) patients. The mean age of the study population was 51.7±10.08 years. Most cases occurred in the age group of 60-69 years. Risk factor analysis revealed identifiable acute injury (puncture, prick/laceration) in 85%, CSOM (2.5%), surgery (2.5%), abortion (2.5%), skin ulcer (1.25%), burn (1.25%), child birth (1.25%), boil (1.25%). Thirty-two (40%) patients had medical wound care before hospital admission but none received tetanus immunoglobulin despite the absence of tetanus immunity. All the patients had the generalized type of disease. Body stiffness, trismus and dysphagia were the three commonest presenting complaints. All the patients with injury and wound (74/80) had their wound debrided. All the tetanus patients (80/80) received intravenous diazepam infusion as part of their management. Seventy two (90%) patients received intravenous crystalline penicillin. Sixty-five (81.25%) patients received intramuscular human antitetanus immunoglobulin and fourteen (17.5%) had tracheostomy performed. In-hospital complications were observed as respiratory (80%), cardiovascular (65%), gastrointestinal (57-5%), renal (33.37%), neurological (17.%) and others (22.5%).

There were eighteen deaths in hospital, accounting for overall mortality of 22.5% (18/80). Higher mortality were observed in age group above 50 years than the age group below 50 years (29.16% vs 12.5%, P<0.05), in female than the male (40% vs 14.54%, P<0.05), in farmer than non-farmer (30.95% vs 13.15%, P<0.05), in patients who had short incubation period than those who had incubation period more than one week (53.33% vs 23.25%, P<0.05),

Conclusion: In general, tetanus remains in Bangladesh an important disease with substantial mortality that primarily affects unvaccinated or inadequately vaccinated individuals. Prevention during wound management of tetanus prone wounds was inappropriate in many patients. The elderly population may have the highest risk for tetanus since they may not have had tetanus toxoid immunization or regular booster injections. It is, however, highly preventable through both routine vaccination and appropriate wound management. Our case series show comparable pattern and outcome with other case series in the developing countries reported in the literatures.

(J Bangladesh Coll Phys Surg 2007; 25 : 62-69)

Introduction

Tetanus is a neurological disorder, characterized by increased muscle tone and spasms. It is caused by tetanospasmin, a powerful protein toxin elaborated by *Clostridium tetani*. *C.tetani* is a ubiquitous organism, found worldwide in soil, in inanimate environment, in animal, and occasionally human faeces. The organism exists in two forms: spores and vegetative cells. Tetanospasmin is formed in the vegetative cells under plasmid control.

Tetanus occurs sporadically and almost always affects non-immunized, partially immunized, or fully immunized persons who fail to maintain adequate immunity with booster doses of vaccine. Although tetanus is entirely preventable by immunization,

a. Dr. A.H.M. Feroz, MD (Int. Med), FCPS (Med), Ex-Associate Professor (cc) of Medicine, Department of Medicine, Faridpur Medical College Hospital

b. Dr. MD. Hafizur Rahman, MBBS, Department of Medicine, Faridpur Medical College Hospital

Address of Corresponds: Dr. A.H.M. Feroz, MD (Int.Med), FCPS (Med)

OSD (Deputed to BSMMU), 161/3 Shantinagar (3rd floor), Dhaka-1217 Tel. 8358981, 0187059292(Mobile)

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tetanus persists as a global health problem. While tetanus has become a rare disease in the developed world, it is a continuing problem in the developing world. The global incidence of tetanus is still estimated at one million cases annually, with a case fatality ratio ranging from 20 to over 50 percent [1, 2,3]. The disease is common in areas where soil is cultivated, in rural areas, in warm climates and among males. In places without a comprehensive immunisation programme, tetanus occurs predominantly in neonates and young children. In countries with successful immunisation programmes, neonatal tetanus is rare and the disease affects other age group inadequately covered by immunisation.

Most cases of tetanus follow an acute penetrating skin injury. The injury may be major but often is trivial, so that medical attention is often not sought. Tetanus is also associated with chronic skin ulcers [1,2], abscesses, gangrene, burns, surgery, abortion [2], childbirth [2], and intravenous drug abuse [2]. In some patients no portal of entry for the organism can be identified [1].

In Bangladesh, like most developing countries in the world, tetanus is endemic and remains an important health problem especially among the rural farming folks. Although an estimated 41,000 cases of neonatal tetanus occur annually [4], the exact incidence of other types of tetanus in Bangladesh, a country with 140 million inhabitants, is not known, partly because of lack of compliance in reporting new cases to the authorities. The Government of Bangladesh, Bureau of Statistics has reported 7.5% of maternal deaths or an estimated 1080 women died in 1996 from pregnancy related tetanus[5]. However, the mortality in other types of non-neonatal tetanus in Bangladesh is not known. We undertook a ten-year retrospective study of all the tetanus cases in adults managed at a 250-bedded teaching hospital, looking into its demographic and clinical profiles, risk factors for tetanus, treatment received and the outcomes.

Materials and Methods

All cases of tetanus in adult patients from January 1994 to December 2003, who were admitted at the Faridpur medical college hospital, were included in this 10-year retrospective descriptive study. The tetanus cases were searched for and identified from the case record files in the Record Office of the hospital. Selection criteria for the patients consists of: (1) Physicians made clinical diagnosis of tetanus (2) Age of 16 years or above and both sexes. Neonatal tetanus and tetanus in children, patients with doubtful clinical diagnosis of tetanus where there were other differential diagnosis like hysterical conversion reaction (HCR), drug induced rigidity were not included in this study.

The individual case notes were then retrieved and studied. Age, sex, occupation, clinical features of the individual cases of tetanus, incubation time, identifiable injury, history of previous vaccination against tetanus, wound prophylaxis, treatment received, complication if any were noted on a standard case record form. Tables and charts were then made to summarize the various data of interest.

Statistical analysis

A descriptive analysis was done on all variables to obtain a frequency distribution. The mean±SD and ranges were calculated for quantitative variables. Between groups comparison were analyzed by Z test to see the statistical significance. The level of significance was considered as $P<0.05$.

Results

There were 80 cases of tetanus in the study period with a range of 6 to 14 cases per year and a mean of 8 cases per year. There were 55male (68.75%) and 25 female (31.25%) patients.

The age distribution of these 80 tetanus patients is shown in figure 1. Most cases occurred in the age groups 60-69 years and 50-59 years, with 20 and 16 cases respectively. Sixty (75%) cases occurred in people more than 40 years of age. Only four patients were less than 20 years of age. The mean age in our series was 51.7±10.08 years.

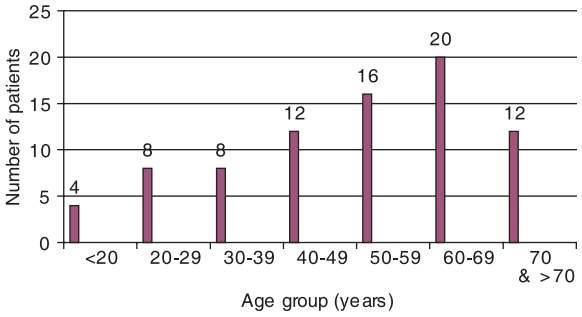

Fig.1: *The age distribution of the tetanus patients (n=80).*

The occupational groups of the patients are shown in Table I. Fourty two (52.5%) patients were farmer, sixteen (20%) were labour and industry worker, ten (12.55%) were housewives and in six (7.5%) patients the exact occupations of the patients were not known as the occupational history were not recorded in medical record files.

Table-I.

Occupational group of the tetanus patients from 1999 to 2003 (n=80).

Occupation	Number of patients (%)
Farmer	42(52.5%)
Labour/industrial worker	16(20%)
House wives	10(12.5%)
Businessmen	3(3.75%)
Student	2(2.5%)
Service	1(1.25%)
Not known	6(7.5%)
Total	82 (100%)

Risk factors for tetanus

Sixty-eight of the 80 (85%) patients had a reasonably identifiable acute injury (prick, puncture wound or laceration) prior to the onset of tetanus, as shown in Table II. In thirty-nine (48.75%) patients, the injuries were on the lower limbs whereas in twenty-nine (36.25%) patients, the injuries were described on the upper limbs. In one (1.25%) patient, a fall led to a wound (ulcer) on the scalp at the occipital region. In another (1.25%) patient, there was a boil on the right leg for about a week before the first symptoms of tetanus. Two (2.5%) patients had chronic suppurative otitis media (CSOM). Other risk factors identified were surgery (2.25%), abortion (2.2%%), child birth (1.25%), burn (1.25%). In two (2.5%) patients, there was no clinically identifiable portal of entry. Thirty (41.66%) patients did not consider the injury severe enough to be treated either by themselves or by doctors. Of the other fourty two (58.33%) patients with a wound who did seek medical help, all got wound cleaning and debridement, thirty (41.66%) received an immunization with tetanus toxoid, and sixteen (22.22%) got prophylactic penicillin antibiotic in combination with an immunization (Table-III). None of the patients received tetanus immunoglobulin in prophylaxis treatment of the wound.

Table-II

Risk factors identified in tetanus patients (n=80)

Presence of injury	Number of patients (%)
Acute injury (puncture, prick, laceration)	68 (85%)
Skin ulcer	1(1.25%)
Boil	1(1.25%)
CSOM	2(2.5%)
Surgery	2(2.5%)
Child birth	1(1.25%)
Abortion	2(2.5%)
Burn	1(1.25%)
No identifiable portal of entry	2(2.5%)
Total	80(100%)

Table-III

Number of patients who received prophylactic treatment for injury/wound before hospital admission (n=72)

Types of prophylaxis	Number of patients (%)
Wound cleaning and debridement	42 (58.33)
Tetanus toxoid	30 (41.66)
Prophylactic antibiotic	16 (22.22)
Tetanus immunoglobulin	0 (0)
No medical treatment	30 (41.66)

Immunization history

A history of previous tetanus immunization was obtained only from fifteen (18.75%) patients (Table-IV). Four patients had received the immunization much more than 10 years ago. There was no written proof of the immunization schedule in any cases. Thirty-seven (46.25%) patients said they never had been vaccinated. The remaining twenty-eight (35%) patients could not provide any information at all regarding vaccination against tetanus. Serology to detect anti-tetanus antibodies was not performed.

Table-IV

Previous tetanus immunization history (n=80)

History of immunization	Number of patients (%)
Received immunization	15(18.75)
Received no immunization	37(46.25)
No information available	28(35)
Total	80(100)

Incubation period

The incubation period, defined as the time between the inoculation of the wound and the onset of the symptoms, could be evaluated in fifty eight (72.5%) patients. The mean incubation period was 10.8±2.1 days (range 3-28 days). Fifteen patients had an incubation period of less than one week, and twelve of them suffered from severe disease. The period of onset, defined as the interval between the first symptoms and the first spasm, could not be evaluated, as it was not recorded in case history of the patients.

Symptoms

All 80 patients developed the generalized type of the disease. A mild type or a local or cephalic type of tetanus was not seen in our patient population. Table-V shows the presenting complaints of the 80 tetanus patients in our series. Body stiffness / spasm (100%), trismus (100%)and dysphagia (51.25%) made up the three commonest presenting complaints. Body ache (25%), backache (22.5%) and abdominal pain(15%) were also fairly common; urinary retention occurred in five(6.25%) patients, while the other complaints (neck pain, jaw pain, dypsnoea) were only present in four(5%) patients each. The diagnosis of tetanus was based upon the clinical presentation. Progression of the disease after initiation of treatment was observed in fourty six patients. An increase in trismus. dysphagia, pain and rigidity of the neck and thoraco-lumber spine with opisthotonus and generalized rigidity were the manifestations. In the remaining thirty-four patients, symptoms did not deteriorate during the first few days of the treatment.

Table-V

The presenting complaints of the 80 tetanus patients in our series.

Presenting symptoms	Number of patients (%)
Body stiffness / spasm	80(100)
Trismus	80(100)
Dysphagia	41(51.25)
Body ache	20(25)
Backache	18(22.5)
Abdominal pain	12(15)
Urinary retention	5(6.25)
Neck pain	4(5)
Jaw pain	4(5)
Dyspnoea	4(5)

Treatment

All the patients were treated in two isolated rooms to guarantee a quite environment. There was no intensive care unit at Faridpur medical college hospital. Table VI shows a summary of the treatments given to the 80 tetanus patients. Surgical toileting and debridement of the wounds were performed in all the seventy-four (92.5%) patients with an identifiable portal of entry (68 with acute wounds and 6 with an infective wounds). Seventy-two (90%) patients received intravenous crystalline penicillin as antibiotics (mean dose 10 MU per day for a mean of 9.6 days); forty (50%) patients received it as the only antibiotics and thirty-two (40%) patients received it in combination with metronidazole. Eight (10%) patients received metronidazole only as antibiotics. Sixty-five patients (81.25%) received intramuscular human antitetanus immunoglobulin. All the 80 (100%) patients received intravenous diazepam infusion as an integral part of their management. Supportive treatment such as balanced fluid and calorie intake, prevention of gastric stress ulcer, prevention of pressure sores were provided in all patients. Prophylactic heparin was used in fourteen patients. Sixteen (20%) patients had to be ventilated artificially via orotracheal intubation (2 patients) or tracheostomy (14 patients). The mean duration of artificial ventilation was 27.5 days (range 4-38 days).

Table-VI

Summary of the treatments afforded to the 80 tetanus patients in hospital.

Treatments given	Number of patients (%)
Wound toilet and debridement	74(92.5)
Intravenous diazepam infusion	80(100)
Intravenous crystalline penicillin	72(90)
Intravenous metronidazole	40(50)
IM human antitetanus immunoglobulin	65 (81.25)
Tracheostomy	14(17.5)
Prophylactic heparin	14(17.5)

Complication and outcome

Sixty-four patients (80%) had pulmonary complications such as bronchopneumonia or repetitive atelectasis (Table-VII). Dysfunction of the autonomic nervous system caused

cardiovascular instability in fifty-two patients (65%). Nosocomial infections were diagnosed in fourteen patients. Four patients died in septic shock. The eventual outcomes of the 80 tetanus patients in our series are depicted in fig-2.

Table-VII

Complication occurring during management

Complications	Number of patients (%)
Respiratory (infection,aspiration, hypoxia, bronchospasm)	64(80)
Cardiovascular (autonomic dysfunction, thromboembolism)	52(65)
Gastrointestinal (stasis,haemorrhage)	46(57.5)
Renal (UTI, renal impairment)	27(33.37)
Neurological (rigidity, memory impairment)	14(17.5)
Miscellaneous (anaemia, hyponatreamia, hypoglycaemia)	18(22.5)

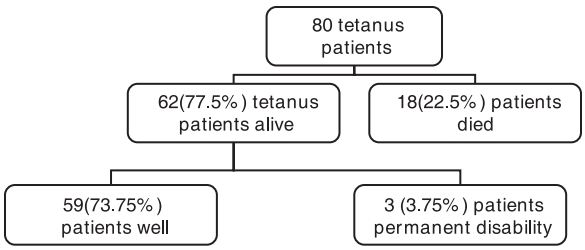

Fig.-2: *Flow chart showing the outcomes of the 80 tetanus patients in our series.*

There were eighteen deaths, accounting for an overall mortality of 22.5%. Mortality was compared between subgroups of patients. Factors associated with poor outcome were (1) age greater than 50 years (2) female sex (3) occupation as a farmer (4) lack of medical treatment for tetanus prone wound and (5) short incubation period. Four (12.5%) died among 32 patients who were below 50 years of age. Fourteen (29.16%) died among 48 patients who were above 50 years of old and higher rate of death was observed among this group patients (29.16% vs 12.5%, P<0.05, Fig-3). Mortality rate was also higher among female than male patients (40% vs 14.54%, P<0.05, Fig-4). Farmers experienced more death than non-farmer (30.95% vs 13.15%, P<0.05). Mortality was higher in patients who had not received any medical treatment for their wound than in patients who had received it for their wound (36.66% vs 14%, P<0.05). Patients with short incubation period of less than one week had higher mortality in comparison with those who had incubation period more than one week (53.33% vs 23.25%, P<0.05).

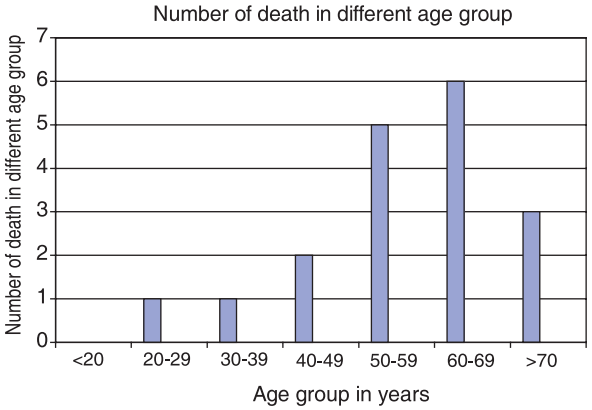

Fig.-3: *Number of death in different age group (n=18)*

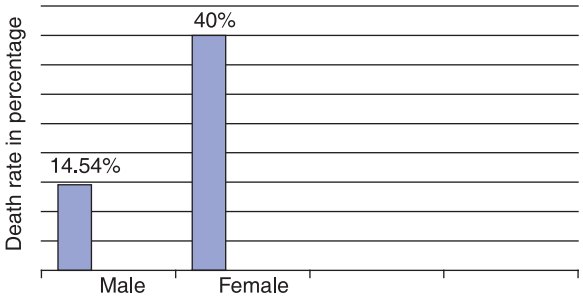

Fig.-4: *Mortality in male and female tetanus patients.*

Sudden cardiac arrest was the most common (50%) cause of death (Table-VIII). Of the 80 patients, sixty two (77.5%) were alive, though two remained in a persistent vegetative state due to hypoxic brain damage and another required a below knee amputation of the left leg. Hence, 59 (73.75%) were discharged well and 3 (3.75%) were discharged with permanent disabilities.

For those 62 patients that were discharged alive, the length of hospital stay ranged from 16 to 150 days with an average length of stay of 83 days. Two patients spent more than 100 days in the hospital; one spent 150 and the other, 119 days. This made the

average length of stay skewed towards a longer duration.

Table -VIII

Causes of death in tetanus patients (n=80)

Causes of death	Number (%)
Sudden cardiac arrest	9(50)
Septicemia	4(5)
Recurrent aspiration/ARDS	2(2.5)
Acute hypoxia	1(1.25)
Pulmonary embolism	1(1.25)
Myocardial infarction	1(1.25)

Discussion

In this retrospective descriptive study we identified a total of 80 cases of tetanus in the ten-year period from 1994 to 2003, giving a mean of 8 cases per anum. The case records of these 80 tetanus cases were thoroughly studied to gather various demographic and clinical data of interest. We found regrettably that in some cases the occupational data of the tetanus patients was incompletely entered and hence, we were not able to analyse these tetanus cases in relation to the occupations of the patients. We were also unable to collect sufficient information on immunization history. More detailed history taking and recording should therefore be mandatory in the future so that important and complete data would be available for analysis to provide invaluable information [3]. Most cases of tetanus occurred in middle aged and elder patients with no prior immunization or with an unknown history of immunization. Waning immunity, caused by the disappearance of the protective antibody levels in subjects who did not receive a regular booster injection, may also account for some tetanus cases [6]. We observed a mean of 8 patients per year with generalized tetanus in our referral hospital. This implies that the present immunization programme does not reach part of the Bangladeshi population. The sex distribution analysis revealed that almost two-thirds of the cases (68.75%) occurred in men while a third occurred (31.25%) in women. This finding is consistent with that of other studies [4,6,7]. This could be explained by the fact that men tend to spend more time outdoor, in farming activities and other types of fieldwork. Hence, they are more likely to be exposed to both the causal organism, *C. tetani,* which is ubiquitous in soil in a tropical country like Bangladesh and the penetrating injury necessary for the organism to enter the body.

The mean age of tetanus patients in our series was 51.7±10.08 years. 75% of the tetanus cases occurred in individuals more than 40 years of age. The possible explanation for this observation is that tetanus immunization programme was only commenced in this country in the mid-1960. Hence, people more than 40 years of age have low immunity against tetanus, because they had never received tetanus immunisation[3.8]. This observation is also consistent with a population-based serologic survey of immunity to tetanus in the United States which showed that the prevalence of Americans with protective levels of tetanus antibody declined rapidly starting at the age of 40 years and that most cases of tetanus occurred in persons of older age group [9].

Majority (52.5%) of the tetanus patients were farmers. This pattern of occupational risk group is explained by the fact that farmers or the peoples who live in the rural areas and engage themselves in the agricultural sector are more likely to be exposed to the causal organism as well as the injury necessary for the organism to enter the body. Sixty-eight (85%) of the tetanus patients had an identifiable acute skin injury; a prick, a puncture wound or a laceration wound, a figure fairly consistent with that of other studies [10]. Thirty-nine (48.75%) of these injuries occurred in the lower limb, while only twenty-nine(36.25%) were on the upper limbs. Other studies also reported that the majority of tetanus wounds were located on the lower limbs [11]. *C. tetani exists* in soil; hence, any lower limb injury would be open to contamination and infection by this organism, bearing in mind too that most tetanus patients were rural farming folks. In 2.5% of the patients, no probable portal of entry was identified; the injuries were likely to trivial to be recalled [1.3,10].

Body stiffness/spasm, trismus and dysphagia, in that order, were the commonest complaints of the tetanus patients in our series. Other investigators had also found trismus and rigidity to be the commonest presenting symptoms [4,12.] Hence, a high index of

suspicion for tetanus should be exercised whenever patients present with any of these symptoms as tetanus is essentially a clinical diagnosis and laboratory results as well as cultures are of little diagnostic value [1,4]. If a patient presents with all the three complaints, the probability of tetanus would be extremely high. Tetanus patients also complained of pains and aches involving other parts of the body, either genaralised or localized such as back, neck and jaw pain. If these were the only complaint, the correct diagnosis as well the appropriate management might be delayed [13].

In terms of management, all patients were given intravenous diazepam infusion to control the spasm and relieve the body rigidity [1,7,12,14]. The usual dose was 10 to 30 mg every eight hours. Sixty-five patients were given intramuscular human antitetanus immunoglobulin to neutralize the free unbound tetanospasmin. All the patients with identifiable portal of entry for the causal organism underwent surgical wound debridement to prevent further elaboration and absorption of the toxin tetanospamin [11,12,15,16]. Seventy-two (90%) of the patients received intravenous crystalline penicillin as the treatment antibiotics; Forty (50%) received it as the sole antibiotics and thirty-two (40%) received it in combination with metronidazole (500 mg every six hours). Metronidazole was only used in the management of tetanus after the mid-1996, before which time penicillin was the sole antibiotic employed [1,17]. In treating C.tetani infection, metronidazole as an antibiotic is more effective than penicillin G since it is a GABA antagonist [18]. Fourteen patients had tracheostomy performed to circumvent the problem of laryngeal spasm (which could lead to asphyxiation and hypoxia) and to enable tracheal suction and toilet to be carried out efficiently (airway protection) [6,16].

The mortality rate of tetanus in our series was 22.5%. This finding is fairly consistent with that of other studies [6,10,11,14]. Most of the deaths in our series were attributed to sudden cardiac arrest and septicemias, though the blood cultures were positive only in six (33.33%) cases of death. This is in consistent with other studies which showed that the most frequent cause of death was cardiac arrhythmias and infections was the second commonest cause of mortality[15]. A Jamaican study, however, also showed that infective respiratory complications occurred most commonly in their series of 108 tetanus patients, but sudden cardiac arrest was the most common cause of death [4].

77.5% of patients of our series survived. Three of them, however, suffered permanent disability. One, a diabetic patient, required a below knee amputation for left foot sepsis (following an injury which was the portal of entry for *C. tetani*) that was unresponsive to conservative management. Another patient, presented with back pain, was wrongly thought to have a non-medical problem and was admitted to the orthopaedic ward. There was a delay in the diagnosis of tetanus and the institution of appropriate management [12]. One more patient presented late with history of generalized convulsion. Both developed hypoxic brain damage and remained in a persistent vegetative state upon discharge. The average length of hospital stay was 83 days. Two patients stayed for more than 100 days, one stayed 150 days and the other, 119 days.

In conclusion, tetanus remains in Bangladesh an important disease with substantial mortality and morbidity that primarily affects unvaccinated or inadequately vaccinated individuals [4,7,11,12]. As Bangladesh, like most third world countries, has very limited resources, the continued occurrence of this preventable disease represents a drain on existing health care funds. This must be brought to the attention of institutions responsible for planning health care programmes. Tetanus is highly preventable through both routine vaccination and appropriate wound management [3,9,10,18]. The method of good management emphasizes: 1) wound care, 2) neutralization of the toxin, 3) antibiotic therapy, 4) supportive measures including good nursing care with control of convulsions, 5) completion of active immunization [3,18]. Another important aspect that was revealed in our study was the inadequate management of those patients who did seek medical care for their wounds. Patients with tetanus prone wounds and an unknown immunity for tetanus only received a booster vaccine without tetanus immunoglobulin or any prophylaxis at all. The lack of appropriate prophylactic measure during wound management was

found in other studies as well [5,6]. Tetanus is a persistent danger that we must not forget but must prevent it. A case of tetanus reflects the failure of our health care delivery system to provide adequate and appropriate immunization [1]. The solution to the problem of tetanus remains prophylaxis [10,17,19].

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Acute Gastric Volvulus - A Case Report

MA BAQUI[a], MM RAHMAN[b]

Summary:

A case of acute gastric volvulus (GV) in a young girl is reported. The patient reported with acute severe upper abdominal pain and distension but no hematemesis, melena and vomiting. Clinically, the condition was diagnosed as acute abdomen and per-operatively the condition was found to be an acute gastric volvulus without any other surrounding pathology. Total gastrectomy with roux-en-y esophago-jejunostomy was done. After resuscitative management immediate laparotomy or laparoscopy is the mainstay of management of acute GV. Its diagnostic difficulties, surgical management and outcome are discussed.

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Introduction

Gastric volvulus (GV) is an abnormal rotation of the stomach and the condition is very rare. The condition may be chronic or acute. The acute GV needs immediate attention and needs resuscitative management followed by operative management if required. Ligamentous laxity may be the main cause of volvulus but a number of other conditions may be associated with the development of this condition.

The case report

Miss TB, a 18 years young female patient was admitted in a private hospital of Savar area with complaints of pain in the epigastrium, right and left hypochondrium for five days. Initially, the pain was mild to moderate and spasmodic in nature but later the pain became severe and constant. The pain was not associated with vomiting, hematemesis, melena, jaundice or dyspnoea. There was history of inability of taking meal. There was past history of recurrent upper abdominal pain of short duration and used to subside spontaneously. On examination the patient was found in very poor general condition with moderate dehydration. Her pulse was 100/m and BP-90/50 mmHg. Upper abdomen was distended moderately with moderate tenderness and severe rigidity. Liver and spleen were not palpable. There was no obliteration of liver dullness and no visible peristalsis or ascites. Digital rectal examination was found normal. Preoperatively nasogastric tube could not be introduced in the stomach. A provisional diagnosis of acute abdomen was done keeping in mind of acute upper GI tract obstruction.

On laboratory Investigation

On investigation, all relevant biochemical parameters of blood was found within normal limits. Total WBC count was high with relative leucocytosis. Plain x-ray abdomen in erect position did not show any pneumoperitoneum or abnormal gas & fluid. In x-ray chest evidence of pneumonitis was found. Ultrasonography of abdomen was found normal.

The patient was operated upon (emergency laparotomy by a long midline incision) on the same day of admission after a period of six hours during which preoperative resuscitation was done. Per-operatively the stomach was found hugely distended and twisted at its two fixed points. Untwisting of the stomach was done but evidence of gangrenous condition of the whole stomach was detected. All efforts to improve the vascularity failed. Consequently, total gastrectomy with roux-en-y loop anastomosis by oesophago-jejunostomy was done. Abdomen was closed in layers keeping a drain in situ. Post-operatively the recovery was uneventful. Contrast x-ray of upper GIT was performed by gastrograffin on fifth postoperatively day and no leakage was found at the anastomotic site. Nasogastric feeding was stared on the fifth post-operative day. and nasogastric tube was removed on the seventh day of operation. Liquid nutritious diets were given up to the

a. Dr. (Col) Mohammad Abdul Baqui, FCPS (Surg), Enam Medical College Hospital, Savar, Dhaka.

b. Dr. Md. Mizanur Rahman, FCPS (Surg), Enam Medical College Hospital, Savar, Dhaka.

Address of Correspondence: Dr. (Col) Mohammad Abdul Baqui, FCPS (Surg), Classified Specialist in Surgery, CMH Savar, Cantt., Savar, Dhaka.

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tenth day post operatively. Frequent small soft rice feeding started from the tenth day on wards. Post operative weight gain was satisfactory. General condition of the patients improved gradually. Haemodynamically she was stable and the patient was advised to report weekly for one month but the patient did not comply with the advice.

Discussion

Gastric volvulus is an abnormal rotation of the whole or part of the stomach. Berti first described the condition in 1866; he reported the postmortem findings in a 60 years old female. Subsequently he described the successful operative treatment of GV in two patients. In 1930, Buchanan classified the anatomical variations associated with this rare condition and aetiological factors clearly addressed by Tanner in 1968. Gastric volvulus is a rare condition that occurs when the stomach twists either in an orgnoaxial or mesenteroaxial direction. Organoaxial volvulus is most common in adults. In infants and children however meseneroaxial volvulus is common.

Although ligamentous laxity must be present thee are number of conditions that are associated with the development of volvulus and these are .

1. Abnormalities of the stomach.
   - Pyloric stenosis and duodenal obstruction
   - In infants, absence or attenuation of ligaments.
2. Abnormalities of surrounding viscerae-splenomegally, volvulus of transverse colon, and dislocation and hypoplasia of left lobe of liver.
3. Rotation of stomach to fill an abnormal space: para-oesophageal hernia, other forms of hiatus or diaphragmatic hernia and with congenital or acquired eventration of the diaphragm[1,2].

The clinical presentation of GV is entirely dependent on whether it is acute with complete obstruction and/or strangulation or chronic and associated with partial obstruction and no ischaemia. An acute event may occur in a stomach that has had chronic volvulus. The volvulus may be transient producing a few, if any symptoms or may lead to acute obstruction or even ischaemia and necrosis[1]. The peak incidence is in the fifth decade of life. Men and women are equally affected[2]. Acute GV occurs when the stomach or part of the stomach rotates more than 180 degrees creating a closed loop obstruction which ultimately leads to ischaemia and strangulation[3].

Borchardt's triad of acute epigastric pain. violent retching and inability to pass a nasogastric tube lead to strong clinical suspicion of acute GV[2]. The classical triad is often difficult to interpret in infants. In older patients, the condition can be difficult to distinguish from myocardial ischaemia. An ECG is often helpful. The plain radiography is often dramatic in both adults and children with a hugely dilated stomach and a double fluid level on the erect film. In patients with eventration or diaphragmatic hernia inverted stomach may be seen in the chest. Chronic or recurrent volvulus presents a clinical picture hat can be mistaken for gall bladder disease, gastritis or peptic ulcer disease[1].

Acute GV requires immediate pre-operative resuscitation followed by urgent laparotomy. The stomach must be derotated, gangrenous area resected and the stomach fixed with repair of any associated defects[1]. Laparotomy can be reserved for patients with either acute or chronic secondary GV[4]. Resection of the stomach and surrounding organs in particular the transverse colon, is required if they are non-viable. Once the stomach is reduced, the remainder of the procedure aims to prevent recurrence. In the present case stomach was gangrenous. So total gastrectomy was done followed by Roux-en-y oesophago-jejunostomy was done after proper resuscitation of the patient.

The treatment of chronic volvulus can be proceede more slowly with careful pre-operative evaluation and assessment of risk of surgery[1]. Acute or chronic GV can be treated successfully by either open or laparoscopic surgery.

Prophylactic gastropexy should be considered in wondering spleen[6,7]. Conservative treatment is both safe and effective in infants with chronic idiopathic GV. Routine gatropexy for all patients with a radiological diagnosis of GV appears to be over-treatment[4]. Laparoscopy not only identifies underlying predisposing conditions but also allows effective fixation for GV. Laparoscopic approach minimizes the access trauma and is superior for benign upper GI lesions[8].

Conditions predisposing to volvulus should be dealt with directly and this may be all that is required. In patients without any predisposing cause some form of gastropexy should be performed to prevent recurrence[1].

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CASE REPORTS

Cervical Ectopic Pregnancy: Case Report

LP BANU[a], S CHOWDHURY[b], K BEGUM[c], F ISLAM[d], S TASNIM[e]

Summary:

A thirty year old lady para 3+0 presented with complaints of amenorrhoea for eight weeks and slight per vaginal bleeding for 28 days with frequent bouts of profuse bleeding. Total abdominal hysterectomy was done. Naked eye examination of the specimen was suggestive of cervical ectopic pregnancy(CEP). Histopathology report confirmed cervical implantation of placenta.CEP is an extremely rare life threatening form of ectopic pregnancy.

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Introduction:

Cervical Ectopic Pregnancy (CEP) is an extremely rare variety of ectopic pregnancy. The incidence of the disease is reported to be between 1 in 10,000 to 1 in 16,000 deliveries.[1] Number of CEP cases are increasing due to invitro fertilization and embryo transfer technique. It is characterized by implantation and growth of fertilized ovum in cervical canal. Due to rarity of the condition retrospective analysis of the cases cannot be done to find out the risk factors. Usually it presents with uncontrolled per vaginal haemorrhage during the first trimester of pregnancy. Rarely CEP cases are found in the second trimester of pregnancy. Clinically it is often mistaken for inevitable or missed abortion.[2] Until recently, hysterectomy was often the only choice available because of excessive haemorrhage during curettage for presumed incomplete or missed abortion[3]. In a 1945 review of world literature at that time 6 of 28 women with CEP died.[4] In recent years many authors have succeeded in treating CEP cases by conservative medical and surgical measures, thus preservation of uterus is made possible.[5,6] Early diagnosis is important for conservative management before bleeding starts. Ultrasonography preferably trans vaginal Sonography (TVS) and βhCG estimation are two important diagnostic tools for early and accurate diagnosis.[6] The atypical presentation of this reported case misleads the diagnosis until before surgery. The patient could be saved from severe haemorrhage by emergency hysterectomy.

Case history:

A thirty year old woman, para 3+0 (normal term delivery at home) was admitted in a peri- urban hospital with profuse per vaginal bleeding following eight weeks amenorrhea. Bleeding was mild for 28 days with frequent bouts of profuse bleeding. She was admitted in a state of hypovolemic shock and was resuscitated with five units of fresh blood. Bimanual pelvic examination revealed a 10 weeks size uterus with a soft irregular cervix. Slightest attempt at per vaginal (p/v) examination initiated profuse bleeding. During her hospital stay, the patient had a peculiar bleeding pattern. Bleeding used to become less at rest and heavy by minor stress like coming from toilet. She experienced two episodes of severe p/v bleeding after admission. Her haematological and biochemical investigations (complete blood count, coagulation profile, electrolytes, urea and liver function tests) were normal. Haemoglobin count was 6gm/dl. Her pregnancy test was positive and ultrasound scan confirmed the presence of a growth/ mole in the lower part of uterus. The patient was poor and the hospital could not provide βhCG report. Initial clinical diagnosis was molar pregnancy/ choriocarcinoma.

a. Laila Parveen Banu, FCPS, Asstt. Professor,Dept of Obs & Gynae,ICMH

b. Sameena Chowdhury, FCPS, Professor and Head, Dept of Obs & Gynae ICMH

c. Kohinoor Begum, FCPS, Professor, Dept of Obs & Gynae DMCH

d. Ferdousi Islam, FCPS, Assoc. Professor, Dept of Obs & Gynae ICMH

e. Saria Tasnim, FCPS, Assoc. Professor, Dept of Obs & Gynae ICMH

Address of Correspondence : Laila Parveen Banu, FCPS, Asstt. Professor,Dept of Obs & Gynae, Institute of Child and Mother Health Matuail, Dhaka- 1362, Telephone: 7542815, Fax: 880-2-7542672, E-mail: icmh@bangla.net , info@icmhbd.org

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After10 days of conservative treatment, chemotherapy was decided. Methotrexate folinic acid rescue therapy continued for two days. She started profuse per vaginal bleeding on the third day of chemotherapy and consequently was taken to the operation theatre. A gentle per speculum and vaginal examination was done under general anaesthesia taking all preparation for hysterectomy. Cervix was almost double in size, ballooned and there was profuse bleeding through the external os. Emergency total abdominal hysterectomy with preservation of both ovaries was done to save the life of the patient. After hysterectomy specimen was cut longitudinally. Uterine cavity was empty .Surprisingly placental tissue was found densely adherent with the wall of endocervix (fig 1). Naked eye examination of the specimen was suggestive of cervical ectopic pregnancy(CEP). Histopathology confirmed cervical implantation of placenta. Patient was discharged after three weeks of hospital stay.

Discussion:

Cervical ectopic pregnancy (CEP) is extremely rare. It was first described in 1817 and it was so named in 1860. In 1911, Rubin in his case report established diagnostic criteria for CEP[7]; close attachment of placenta to cervix, cervical glands present opposite the implantation site, placental location below uterine vessel insertion and no fetal elements in the uterine corpus. Ultrasonography preferably trans vaginal sonography (TVS) and βhCG estimation permits early and accurate diagnosis of CEP.[8,9,10, 11] Ultrasound criteria for CEP are 1) Echo free uterine cavity 2) Decidual transformation of the endometrium with dense echo structure. 3) Hour glass uterine shape. 4) Ballooned cervical canal. 5) Gestational sac in the endocervix. 6) Placental tissue in the cervical canal. 7) Closed internal os. The serum βhCG concentration doubles up in 48 hours in normal pregnancy. In abnormal pregnancy including ectopic pregnancy, the βhCG level do not increase at this rate. If the percentage increase in βhCG during 48 hours is less than 66 percentage, the chance of ectopic pregnancy is high. CEP cases are often wrongly diagnosed as inevitable abortion due to open external os and product in cervical canal. During curettage for removal of product of conception (POC) profuse bleeding ensues from the placental site.[12] As cervix is non retractile it is difficult to stop hemorrhage. Tight packing of cervix is a very effective method of stopping hemorrhage. Newer surgical techniques are anterior cervicotomy and under running the bleeding vessels with 0 chromic catgut, electro coagulation, cervical cerclage by Mac Donald's technique to constrict the blood vessels.[13] Now a days several other techniques are also practiced. Dilatation and curettage after uterine artery embolization, ultrasound guided potassium chloride injection into amniotic sac allow safe termination of CEP with preservation of uterus[14]. Hysteroscopic resection of cervical ectopic pregnancy is a new surgical approach. It permits direct visualization and allows complete resection and thus avoid prolonged follow up[15,16]. Success of conservative management of CEP depends on early diagnosis. Farrabow et al. was the first to report the use of Mehthotrexate (MTX) in CEP cases.[17] Both high (>150 mg) and low dose (<150mg) protocols have been reported.

MTX is administered systemically (Intravenous/ Intramuscular) or as local intra amniotic injections. Single low dose MTX injections (20 to 50 mg) combined with 3 doses of prostaglandin infusion (Nalador sherine pharma) 500μgm have been reported successful.[18] Hung et al. described some prognostic factors affecting out come of conservative MTX management.[19] MTX is less successful when βhCG concentration is more than 10,000 IU/L, gestational age is more than nine weeks and when feotal heart beat is present. Methotrexate is commonly practiced either alone or in combination with folinic acid. Creming and Feldstein[20] reported successful conservative management with selective right hypogastric and left uterine artery embolization followed by suction evacuation. Subsequent successful pregnancies have been documented after cervical curettage and lower uterine cerclage operation. Successful tamponade technique was described by Van and Meersche et al. [21] When all these conservative measures fail ultimate treatment to save maternal life is emergency hysterectomy.[22]

Conclusion:

Diagnosis of CEP is very difficult. Increased clinical awareness, use of a good Trans Vaginal ultrasound and βhCG -estimation in the first trimester in

suspected cases help early and accurate diagnosis of CEP cases. The newer medical and surgical procedures allow preservation of fertility after CEP. Bleeding in the first trimester with cramping pain in lower abdomen needs special attention. CEP should be one of the differential diagnosis of bleeding in the first trimester of pregnancy.

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Phyllodes Tumour of Breast: BSMMU Experience

S AHMED[a], MA RAHMAN[b], KM MURSHED[c], L SHIRIN[d]

Summary:

This study was done is Banghabandu sheik mujib medical university, Dhaka. Bangladesh from January 2000 to December 2003 to see the presentation different options of management - & out come of treatment. Total 11 Patients of Phylloides Tumour were included in the study. Most Patients (55%) were above the age of 51 Years & well circumscribed non-tender firm mobile breast lump was the commonst (55%) presentation 73% Patients were treated by wide local excision & 18% needed mastectomy. About 18% cases had recurrence after 15 months follow-up. Any large painless mobile breast tumour of rapid onset should ra se the suspicion of phyllodes tumour. Benign tumour can be trcaked by wide local excisions simple mastectomy is the standard treatment for malignant lesion.

(J Bangladesh Coll Phys Surg 2007; 25 : 70-72)

Introduction

Phyllodes tumour is a rare fibro epithelial neoplasm of the breast, usually benign and rarely malignant(1%)[1]. It has a sharply demarcated, smooth texture and is typically freely movable, relatively large tumour and comprises less than 1% of breast neoplasm [2]. It may distort the breast, produce bulge in the skin surface, and even cause pressure necrosis of the overlying skin to appear as an irregular mass. The most ominous change is the appearance of increased stromal cellularity, anaplasia, and high mitotic activity [3]. Finding similar to fibro adenoma - mobile masses with distinct border, generally present as larger masses with rapid growth[4]. It is a rare biphasic tumour was described first by Jhonnes Muller in 1938 [4, 5, 6]. The incidence of phyllodes tumour is high in the 5th decade [7, 8].

Materials and Method

This study included 11 patients of phyllodes tumour in Banghabandu sheik mujib medical university, Dhaka, Bangladesh, from January 2000 to December 2003. Diagnosis was done by clinical history, examination and FNAC and histopathological examination. After confirmation of the diagnosis all patients were treated by surgery.

a. Dr. Saif uddin Ahmed, Asstt. Prof. Surgical Oncology, B.S.M.M.U.

b. Dr. Md. Atiar Rahman, Asstt. Prof. Surgery, B.S.M.M.U.

c. Dr. Khandker Manzoor Murshed, Asstt. Prof. Surgery, B.S.M.M.U.

d. Dr. Laila Shirin, FCPS (surgery), B.S.M.M.U.

Address of Correspondence: Dr. Saif uddin Ahmed, Asstt. Prof. Surgical Oncology, B.S.M.M.U.

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Results:

In this study six patient's typically presented with firm mobile well circumscribed non-tender breast lump. Two patients had ulceration to the nipple and areola. Two patients presented with larger masses with rapid growth involving whole of breast (table-2). Involvement of axillary lymph node is rare, but in our study one patient had large breast lump with enlarged axillary lymph node.[1] Breast lump was firm to hard and non tender, lymph node was mobile non tender and firm in consistency.

In our study population mammography, USG, FNAC and histopathology done in all patient. Mammography revealed high-density mass in all patients. [2] USG revealed cystic area in seven patients, four patients had lobulated shaped mass with marked posterior acoustic enhancement. (table-3)

FNAC shows large epithelial clusters with a folded or wavy shaped indicating benign phyllodes tumour. These are the characteristics features of phyllodes pattern of its histology. [10]

Ten patients Histologically had benign phyllodes tumour, one patient was malignant phyllodes tumour.

Out of eleven, eight patients were treated by wide local excision, two patients needed simple mastectomy. One patient had breast lump with

axillary lymph node enlargement, FNAC showed malignant phyllodes tumour needed simple mastectomy with axillary clearance. (Table-4)

Results:

Table-I

Age of the Study Population (n = 11)

Age	No.	%
< 30yrs	2	18%
31 - 50 yrs	3	27%
51 yrs and above	6	55%

Table-II

Presentation of study population: (n=11)

Breast lump	6	55%
Ulcerated nipple and areola	2	18%
Whole breast become lump	2	18%
Enlarge breast with axillary L.N	1	9%

Table-III

Investigation reports

	Total Number	Results
Mammography	11	High density mass
USG	11	7 -mass, cystic area 4 lobulated
FNAC	11	3- PHYLLODES 8- Fibroadenoma
HISTHOPATHOLOGY	11	10-PHYLLODES (BENIGN) 1- PHYLLODES (MALIGNANT)

Table-IV

Type of operation (n=11)

Wide local excision	8	73%
Mastectomy	2	18%
Mastectomy with axillary clearance	1	9%

Table-V

Postoperative treatment offered

Radiotherapy	Not given
Chemotherapy	Done

Table-VI

Follow up - 15 months two patients had recurrence

1 - Benign	8 - month later
1 - malignant	12 - month later

Discussion:

Phyllodes tumour is a biphasic tumour with an unpredictable behavior[11]. It can occur at any age, median age is fifth decade. In our study two patients less than 30 years, three patients 31 - 50 yrs. and six patients above 51 yrs. Patients with phyllodes tumour typically present with a short history of large painless mobile breast lump [4, 6, 8] and also presented ulceration in areola and rarely enlarged axillary lymph node. In our study maximum patients (40%) presented with breast lump, two patients with ulceration and two large masses in breast and one patient presented with enlarged axillary lymph node.

In FNAC, eight patients diagnosed as fibroadenoma and three patients as phyllodes tumour. The diagnosis of phyllodes is best achieved by histological examination of the specimen using either core or excisonal biopsy[12]. Frozen section examination is reliable in the diagnosis of phyllodes, however it is less precise in determining malignancy.[6] As both phyllodes and fibroadenoma belong to the fibroepithelial lession, diagnosis of phyllodes by fine needle aspiration is unreliable.The differential diagnosis of fibroadenoma vs phyllodes tumour [8] by the fine needle aspiration cytology is not possible in the majority of cases [8, 13]. In our study all patients were diagnosed by histhopathological examination, ten patients benign and 1 patient malignant phyllodes tumour.

Mammography or USG is not an accurate tool for the diagnosis of phyllodes or to predict whether the lesion is low grade or aggressive [4, 12, 14].

Wide surgical excision is the treatment of choice for phyllodes tumour [8]. In malignant variety, simple

mastectomy is the standard treatment. Axillary lymph node metastasis occurs in 10% of patients with malignant phyllodes, thus routine axillary lymph node dissection is unjustified [4, 6, 15, 16]. In our study wide local excision done in eight patients, two patients treated by simple mastectomy, and one patient treated by simple mastectomy with axillary clearance. Adjuvant chemotherapy given [8], radiotherapy not recommended. The role of radiation therapy remains unclear.[17], Pandy, et al shows adjuvant radiotherapy appears to improve the disease free survival. Recurrence and metastasis remain the most serious problem associated with phyllodes tumour.[18] Local recurrence is 15%, distant metastasis 25% [4, 5, 6, 19]. Kalposis I et al study shows - local recurrence occured in 40% at mean time of 28 months after primary treatment. Distant metastasis occured in 27% patient at average time of 25.6 months. Tumour size and surgical margins were found to be the principal determinents of local recurrence and distal metastasis.[20]

In follow up of last 15 month, one patient developed local recurrence, she underwent simple mastectomy and histopathology report was benign lesion. One patient with malignant phyllodes tumour developed solitary bony metastasis in the right iliac bone. She received a course of chemotherapy.

Conclusion:

The clinical findings of a large painless mobile tumour of rapid onset should raise the suspicion of phyllodes tumour. Benign phyllodes tumour can safely be treated by wide local excision with an adequate [1-2cm] margins. Simple mastectomy is the standard treatment for malignant lesion. Recurrence of phyllodes tumour, is treated by simple mastectomy, 5yr survival rate of benign lesion is 90%, malignant lession is 60%. The role of adjuvant chemotherapy and radiotherapy is not clear. Metastatic phyllodes tumour has a poor prognosis. Close follow up is mandatory.

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Study on Foetal Outcome in Pre-eclamptic Mother

S RAHMAN[a], N SULTANA[b], AKMM RAHMAN[c], S AKHTAR[d], N BEGUM[e], MM RAHMAN[f]

Summary:

Pre-eclampsia or pregnancy induced hypertension (PIH) re-named as gestational hypertension is one of the important causes of maternal death in developing countries like Bangladesh. The foetal outcome is also very unsatisfactory and disappointing in pre-eclamptic mothers. Considering this view, the objective of this study was to assess the foetal outcome in pre-eclamptic mothers and also to identify the factors influencing the outcome. This was a cross sectional study conducted among the pregnant mothers admitted into Gynaecology and Obstetrics Department of Shaheed Suhrawardi Hospital, Dhaka, with specific signs and symptoms of pre-eclampsia during the period from January 2002 to December 2003. A total of 100 pre-eclamptic mothers were studied. Bi-variate analysis revealed that a statistically significant association was present between complicated pre-eclampsia ($p<0.05$) and previous positive medical history with abnormal foetal outcome ($p<0.05$), but no statistically significant association was found between foetal outcome and age, occupation of the mother and the husband, socioeconomic status, parity, hypertension, diabetes mellitus, previous surgical and bad obstetrical history, body built, maternal oedema ($p>0.05$). Analysis also found that poor foetal outcome was significantly associated with haemoglobin level less than 10 gm%, gestational age and mode of delivery ($p<0.01$). Analysis of relative risk indicated that the abnormal foetal outcome was 7.1 times higher in complicated pre-eclamptic mothers than only pre-eclamptic mothers ($p<0.001$, 95% CI=2.598-19.957).

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Introduction:

Pre-eclampsia or pregnancy induced hypertension (PIH) or gestational hypertension is a multi-factorial condition involving some sort of immune response to pregnancy. It is characterized by hypertension, proteinuria and also oedema and hyperreflexia occurring primarily in nulliparas after the twentieth week gestational age and most frequently near term. After all, there is foreign material (i.e. father's genetic component)which tries to graft to the mother with varying intensities of rejection. The term varying intensity is responsible for the numerous ways that presents in different pregnant women which has been the difficulty in nailing down on 'Grand unification theory' of its cause[1]. Most often it occurs in young women with a first pregnancy. It is more common in twin pregnancies and in pregnancy induced hypertension in a previous pregnancy and also in women with pre-existing chronic hypertension. The condition PIH or gestational hypertension (previously known as pre-eclampsia) is mainly characterized by high blood pressure and proteinuria[1]. Other features are oedema and hyperreflexia or exaggerated tendon reflexes (e.g. the knee jerk). It is one of the two major maternal conditions associated with child birth related maternal deaths. The effects of this condition on the foetus are also very unsatisfactory[2] and disappointing in some cases. Outcome of foetuses in hypertensive mothers is directly related to the reduced effective blood flow to the utero-placental circuit. Foetal death is usually due to hypoxia, often acute and secondary to *abruptio placentae* or vasospasm, and is generally preceded by intrauterine growth retardation (IUGR). If untreated, severe pregnancy induced hypertension may cause dangerous seizures and even death of the mother and foetus.

a. Dr. Sharmin Rahman, FCPS, Senior Consultant, Department of Gynaecology & Obstetrics, Shaheed Suhrawardi Hospital, Dhaka

b. Dr. Nargis Sultana, FCPS, Medical Officer, Department of Gynaecology & Obstetrics, Shaheed Suhrawardi Hospital, Dhaka

c. Dr AKM Mujibur Rahman. FCPS, MD, Senior Consultant, Department of Medicine, Shaheed Suhrawardi Hospital, Dhaka

d. Dr. Sayeeda Akhtar, MCPS, DGO, Senior Consultant, Department of Gynaecology & Obstetrics, Shaheed Suhrawardi Hospital, Dhaka

e. Professor (Dr.) Nasima Begum, FCPS, Chief Consultant, Department of Gynaecology & Obstetrics, Shaheed Suhrawardi Hospital, Dhaka

f. Dr. Md. Mizanur Rahman, Ph. D (Statistics), Assistant Professor, Biostatistics, National Institute of Preventive and Social Medicine (NIPSOM), Dhaka

Address of correspondence: Dr. Sharmin Rahman, Senior Consultant, Department of Gynaecology & Obstetrics, Shaheed Suhrawardi Hospital, Dhaka

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Because of these risks, it may be necessary for the baby to be delivered early before 37 weeks of gestation i.e. before the baby being matured. This prematurity also adversely affects the foetal outcome[3]. Now-a-days, the diagnosis and management of PIH (pre-eclampsia) are improving and will eventually improve the maternal and foetal outcome.

Materials and method:

This was a cross sectional study conducted among pregnant mothers admitted in the Gynaecology and Obstetrics department of Shaheed Suhrawardi Hospital, Dhaka, with specific signs and symptoms of pre-eclampsia, over the period from January 2002 to December 2003. Data was collected by using a pre-designed questionnaire. A detailed history of the patient covering the age, parity, socio-economic status, occupation of both husband and wife, and past obstetrical, medical and contraceptive history was taken. The detailed obstetric history included parity, previous pregnancy outcome (in multiparous women) and if any history of pre-eclamptia or PIH in previous pregnancies. Patient's height was measured in centimeter with bare foot and no head cover, and weight was measured in kilogram (kg) with 100 gm precision. Maternal blood pressure was recorded by using mercury manometer, and was monitored with prime importance. The blood pressure 140/90 mm of Hg or a significant increase in systolic or diastolic or both pressures associated with protein in urine with or without oedema considered as features of pre-eclampsia[4]. Meticulous obstetrical examinations along with other general examinations were done to diagnose or to exclude few findings which have importance in patients with pre-eclampsia. As for example, fundal height, liquor volume, foetal size etc. On general examination, special importance was given to blood pressure recording, anaemia, any oedema and other signs related to complications of pre-eclampsia. Few baseline investigations were done in each case which were available in this institute such as Hb%, random blood sugar (RBS), fasting blood sugar (FBS) and two hours after 75gm glucose in patients with high RBS level or strong family history of diabetes mellitus (DM) or previous history of gestational diabetes, urea, creatinine, uric acid and ultrasonography (USG) of gravid uterus. Due to limitations, estimation of 24 hours total protein output in urine could not be done though it was needed to assess severity of the condition in few cases. In some severe cases, liver enzymes and platelet count were done to diagnose haemolysis, elevated liver enzyme and low platelet (HELLP) syndrome. Before collection of data, all the patients were briefed about the purpose of the study and informed consent was obtained from each patient. Data analysis was done using Statistical Package for Social Science (SPSS, version 11.5). Univariate analysis was done to see the frequencies. Bi-variate analysis was done between foetal outcome and selected socio-demographic and maternal variables to find out any association. Statistical significance was tested at 5 percent of probability level and p value at <0.05 was considered as significant.

Results:

The mean age of the mothers was 27.0±5.8 years ranging from 14 to 37 years. Among them, 10% were adolescent mothers. Regarding the socio-economic conditions, more than two-fifths (44%) were poor, 48% were average and only 8% had higher socioeconomic status. More than four-fifths (83%) were housewives and remaining 17% were engaged in different types of jobs such as service, garment worker, maidservant, students etc. About half (48%) of them were primipara. Regarding risk factors, highest percentage (57%) had hypertension, followed by 43% had past history of some medical problems , 32% had bad obstetric history, 16% had diabetes mellitus, only 4% had previous history of surgical treatment and two third of the mothers had haemoglobin level less than 10 gm% (63%).

Out of 100 patients, 51% had normal foetal outcome, 18% had low birth weight, 12% had intra uterine growth retardation, 10% had birth asphyxia, 5% twin pregnancy, 2% congenital malformation,and intrauterine death of the foetus was found in 2%. The mothers with complicated delivery such as low birth weight, intra uterine growth retardation, birth asphyxia, twin birth etc were found to have abnormal foetal outcome (Figure:- 1).

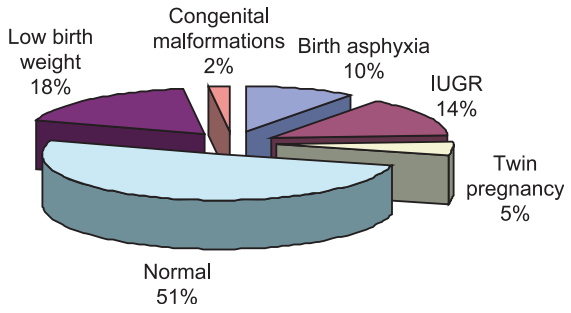

Fig.-1: *Shows the percentage distribution of foetal outcome*

Bi-variate analysis revealed a statistically significant association between complicated pre-eclampsia ($p<0.05$) and previous positive medical history ($p<0.05$) with abnormal foetal outcome, but no statistically significant association was found between foetal outcome and age, occupation of the mother and the husband, socio-economic status, parity, hypertension, diabetes mellitus, previous surgical and

Table II

Percentage distribution of foetal outcome by selected variables

Variables	Foetal Outcome		Total (N=100)	P value
	Normal (n=51)	Abnormal (n=49)		
Age in years				
20-29	49	57.1	53	0.416ns
<20 -?30	51	42.9	47	
Occupation(wife)				
Housewife	86.3	79.6	83	0.375 ns
others	13.7	20.4	17	
Occupation(husband)				
Manual job	17.6	22.4	20	0.548 ns
Non manual job	82.4	77.6	80	
Socioeconomic condition				
Poor	45.1	42.9	44	0.821ns
Average and higher	54.9	57.1	56	
Parity				
Primi	43.1	53.1	48	0.321ns
multipara	56.9	46.9	52	
Contraceptive use				
Yes	29.4	36.7	33	0.43 ns
No	70.6	63.3	67	
Hypertension				
Yes	60.8	53.1	57	0.435ns
No	39.2	46.9	43	
Diabetes mellitus				
Yes	19.6	12.2	16	0.315ns
No	80.4	87.8	83	
Past medical history				
Yes	52.9	32.7	43	0.041s
No	47.1	67.3	57	
Past surgical history				
Yes	2	6.1	4	0.268 ns
No	98	93.9	96	
Past obst. History				
Yes	39.2	24.5	32	0.115ns
No	60.8	55.5	68	
Haemoglobin (gm)				
?10gm	58.6	32.7	37	0.008s
<10gm	41.2	67.3	63	
Oedema				
Yes	88.2	98	93	0.112 ns
No	11.8	2	7	
Body built				
Good	29.4	22.4	26	0.427ns
Poor	70.6	77.6	74	
Type of PET				
Uncomplicated PET	88.2	51	70	0.001s
Complicated PET	11.8	49	30	RR=7.01
			(95% CI=2.5-19.9	
Mode of delivery				
LUCS	78.4	93.9	86	0.026s
Vaginal delivery	21.6	6.1	14	
Gestational age (wks)				
>37	98	67.3	83	0.001S
<37	2	32.7	17	

bad obstetrical history, body built and maternal oedema ($p>0.05$). In anaemic mothers, a statistically significant association was found between foetal outcome and level of haemoglobin ($p<0.01$). Similarly, the foetal outcome was significantly associated with, mode of delivery and gestational age ($p<0.05$). The analysis of relative risk indicated that the abnormal foetal outcome was 7.1 times higher in complicated pre-eclamptic mothers than only pre-eclamptic mothers ($p<0.001$; 95% CI=2.598-19.957).

Discussion:

Worldwide, each year, more than four million women develop pre-eclampsia and approximately 100,000 women would have eclamptic convulsions, with over 90% occurring in developing countries. Pre-eclampsia complicates 2–3% of all pregnancies (5–7% in nulliparous women) and 2% of women with pre-eclampsia would develop eclampsia[5]. Pre-eclampsia is associated with significant morbidity and mortality for mother and baby. Despite a steady reduction in maternal mortality from the disorder in more developed countries, it remains one of the most common reasons for a woman to die during pregnancy in developing countries. The disorder starts with a placental trigger followed by a maternal systemic response. Because both this systemic response and the woman's reaction to it are inconsistent, the clinical presentation varies in time and substance, with many different organ systems affected[6].

Foetal complications resulting from prematurity occur following early delivery which may have to be done in many cases to save the mother. In severe cases there may be intrapartum foetal distress, or stillbirth. Intrauterine growth retardation (IUGR) is a well known foetal complication of pre-eclampsia[7]. The low birth weight infants have a higher risk of mortality as they are likely to die especially during their neonatal period[8]. This study was done with an objective to assess the foetal outcome in pre-eclamptic mothers and to identify the risk factors associated with the adverse foetal outcome.

The study results also revealed that the foetal outcome was significantly associated with few factors which may be highlighted as pre-eclampsia with complications (eclampsia, abruptio placentae, HELLP syndrome, renal failure, cardiac failure etc), past history of chronic hypertension, diabetes mellitus etc. Maternal anaemia was also found to be a significant factor influencing outcome of the foetus[9]. Keeping all these factors in mind one should deal the patients with pre-eclampsia with utmost importance to control those factors. Neonatal complications occurring in babies of pre-eclamptic mothers are closely related to the severity of the hypertension and proteinuria (though the present study could not find out the exact correlation between foetal outcome and proteinuria) [10]. There is a strong association between perinatal loss and both prematurity and low birth weight and pre-eclampsia and it is often associated with premature termination of pregnancy to save the mother. The study revealed that majority of the patients delivered their baby through lower uterine caesarean section. This might be due to the fact that in the study hospital, majority of the patients came with complications such as severe PIH, impending eclampsia, oligohydramnios, or other bad obstetrical history. As a result, the operative interference was relatively more than normal vaginal delivery. The foetal outcome is greatly influenced by the mode of treatment of pre-eclampsia. This abnormal outcome can be changed to a normal acceptable one by optimum antenatal care, adequate screening of the risk factors followed by proper and timely use of obstetric interventions[11,12]. The incidence of pre-eclampsia or pregnancy induced hypertension with abnormal foetal outcome can be reduced by strengthening antenatal monitoring, prevention of complications, early diagnosis and appropriate and adequate treatment of pregnancy induced hypertension[13].

The risk of abnormal foetal outcome is higher in complicated pre-eclamptic mothers. So, it needs special care in antenatal, intranatal as well as in postnatal period. As pre-eclampsia itself is not preventable and the foetal outcome is poor in complicated pre-eclampsia, early measures may be taken to prevent it's complications that will greatly help to improve the foetal outcome.

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REVIEW ARTICLES

Migraine management in children - Review of strategies and Recommendations

NC KUNDU[a], Q AHMAD[b]

Summary:

Headache is a frequent health problem in children and adolescents. It is estimated that headache occurs in around 70% of adolescents and 25% of younger children. This ranks headache and migraine in the top five health problems of childhood. Headache in children is often considered as an excuse to abstain from studies and school; and thus not taken seriously by adults. This article highlights the importance of headache in children and provides evidence based treatment guidelines in this group of patient.

(J Bangladesh Coll Phys Surg 2007; 25 : 77-85)

Introduction

Headache, and more particularly migraine, is a frequent health problem in children and adolescents.[1] It is estimated that headache occurs in around 70% of adolescents and 25% of younger children.[2] The reported prevalence increases from 3% (age 3 to 7 years) to 4 - 11% (age 7 to 11) to 8 - 23% (age 11 to 15+) with the mean age at onset being 7.2 years for boys and 10.9 years for girls.[3,4] This ranks headache in the top five health problems of childhood. Frequent headaches cause a significant impact on performance [5, 6] as well as quality of life,[7, 8] prompting the need for early recognition and treatment. As this group of patients is under supervision of pediatricians since infancy, most of the parents consult them. A few percentage of parents and refractory cases consult neurologist. There are wide variations seen in drug management of pediatric migraine. This review article is aimed to provide all concerned about recent strategies and recommendations recommended by authorities regarding management of pediatric migraine. This can possibly help us to manage this group of patients more efficiently than before.

Diagnosis and classification of Headache

Diagnosis of primary headache disorders of children rests principally on clinical criteria as set forth by the International Headache Society (IHS,1988)[9]. In 2004, the IHS published a modified International Classification of Headache Disorder (ICHD) for primary (e.g. including migraine, with and without aura) and secondary headache disorders (table-1)[10]. For young children, the 1988 IHS criteria were too restrictive, and the second edition ICHD criteria have incorporated more developmentally sensitive criteria.[11,12,13,14,15]

Table-1

IHS Classification of Migraine- 2004

1 Migraine without aura
2 Migraine with aura
- Typical aura with migraine headache
- Typical aura with non-migraine headache
- Typical aura without headache
- Familial hemiplegic migraine
- Sporadic hemiplegic migraine
- Basilar type migraine

3 Childhood periodic syndromes (commonly migraine precursors)
- Cyclical vomiting
- Abdominal migraine
- Benign paroxysmal vertigo of childhood

4 Retinal migraine
5 Complications of migraine
- Chronic migraine
- Status migraine
- Persistent aura without infarction
- Migrainous infarction

6 Probable migraine

a. Dr. Narayan Chandra Kundu, Assistant professor, Department of neurology, Rajshahi Medical College.

b. Dr. Quamruddin Ahmad, Associate professor, Department of neurology, Rajshahi Medical College.

Address of Correspondence: Dr. Narayan Chandra Kundu, Assistant professor, Department of neurology, Ward # 21, Rajshahi Medical College Hospital, Rajshahi.

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Table-II

IHSS Criteria for Paediatric Migraine without Aura

A. At least five attacks fulfilling criteria (B-D)
B. Headache attacks lasting 1 to 72 hours.
C. Headache with at least 2 of the following 4 features:
   1. Either bilateral or unilateral location (frontal/temporal)
   2. Pulsating quality
   3. Moderate to severe intensity
   4. Aggravated by/or causing avoidance of routine physical activity.
D. At least 1 of the following accompanies headache
   5. Nausea and/or vomiting
   6. Photophobia and Phonophobia
E. Not attributable to another disorder.

Diagnostic criteria for children are broader than those for adults, and allow for a broader range of duration and a broader localization of the pain. In essence, migraine can be defined as a recurrent headache that occurs with or without aura and lasts 1-72 hours. It is usually unilateral, of moderate or severe intensity, pulsating in quality and aggravated by routine physical activity. Nausea, vomiting, photophobia and phonophobia are common accompanying symptoms.

Aetiopathogenesis

The cause of migraine is unknown and there are few reliable data that have identified risk factors or quantified their effects in children. A family history is common. Proposed precipitants in genetically predisposed children and adolescents included hunger fasting, menses, exercise, stress (for example, sleep deprivation) and food stuff (e.g. chocolate).[16,17]

Recently, a link between dominantly inherited migraine with aura & atrial septal / patent foramen ovale has been proposed.[18] This is supported by one study of 215 adult patients in which closure of a patent foramen ovale in known migraineurs significantly reduced the frequency of subsequent migraine attacks.[19]

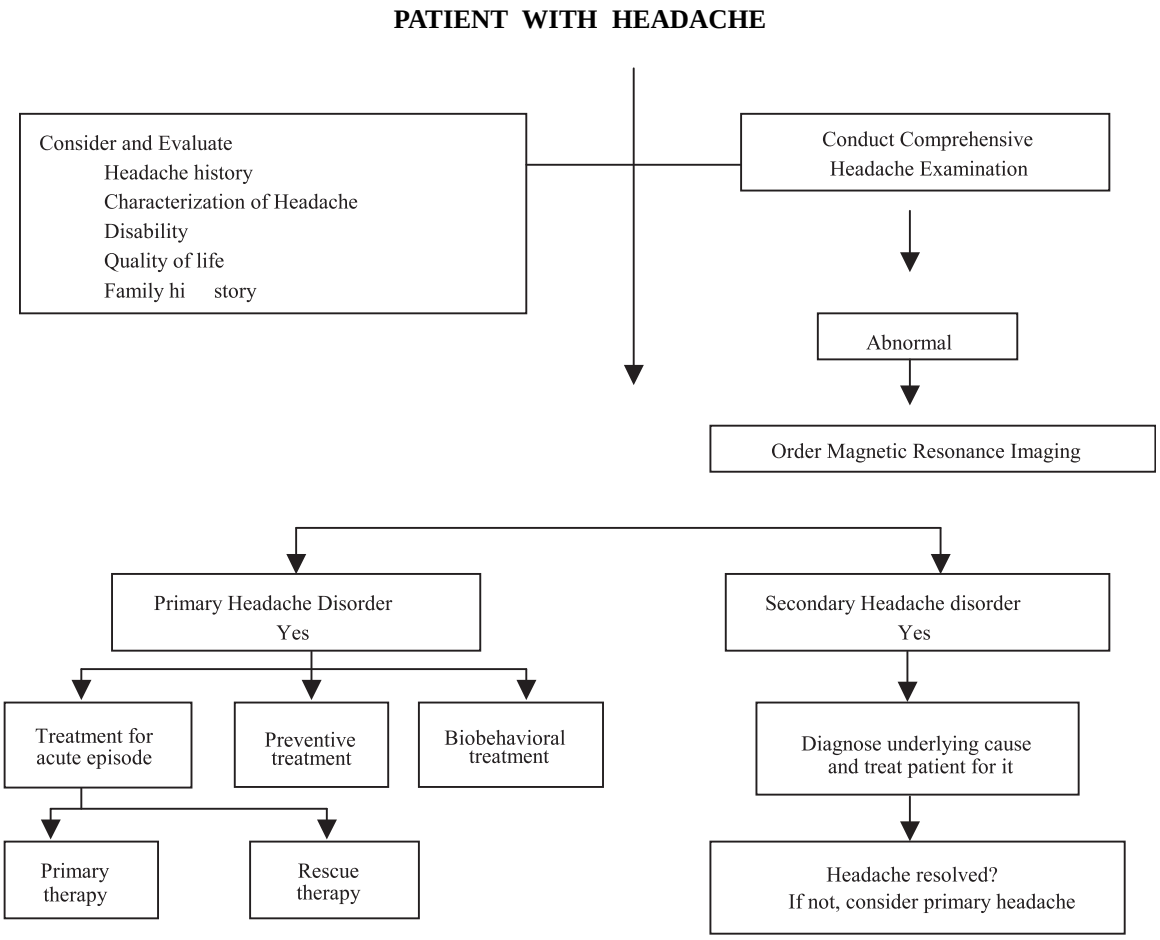
Migraine is currently thought to be a primary process. In the milieu of a hyper-excitable cortex, various stimuli probably produce disturbances in neuronal ion channel activity, resulting in a lowered threshold for external or internal factors to trigger 'cortical spreading dysfunction' (CSD). This slowly propagating wave of neuronal depolarization is most likely responsible for the migraine aura and activation of the trigemino-vascular system.[20] The perception of pain associated with migraine probably begins with activation of trigeminal vascular afferents, which in turn sensitize other peripheral and central afferent circuits to mechanical, thermal, and chemical stimuli. Stimulation of these circuits is painful.[21]

An abnormal cerebrovascular response to visual stimuli may also be contributory; when compared with headache-free subjects, migraineurs with aura exhibit a significantly higher cerebral blood flow in response to repetitive visual stimulation.[22] Furthermore, migraineurs significantly lack habituation of this vascular response, suggesting that a reduced adaptation to environmental stimuli (including light) may be part of the pathogenic process.[22]

Evaluation

The evaluation of childhood headaches require a complete general health assessment, as well as a neurologic and headache history (figure below). Headache history includes an identification of the frequency, duration, severity and quality of headache components, as well as location on the head, impact of disability and associated symptoms. Guidelines in this evaluation and the use of ancillary tests have been developed.[23]

Headache disability can be assessed with the current PedMIDAS (Paediatric Migraine Disability Assessment Score),[5] a paediatric version of the adult disability instrument MIDAS.[24] Quality of life also can be assessed with Peds QL (Paediatric Quality of life), which has been validated in paediatric migraine populations.[8] Evaluation should comprise a comprehensive headache examination,[26] including recognition of muscular tightness, cranial bruits, the Mueller sign to assess for sinus tenderness, and a detailed ophthalmologic evaluation with observation of the optic disk. If results of the evaluation suggest the presence of a secondary headache, further investigation including laboratory evaluation or neuro-imaging may be necessary.



General Principles of Treatment

General principles of management of adults with migraine headaches have been established by the previously published ANN Practice Parameter. Fundamental goals of long term migraine treatment have been established that include[26] ;1) reduction of headache frequency, severity, duration, and disability; 2) reduction of reliance on poorly tolerated, ineffective, or unwanted acute pharmacotherapies; 3) improvement in quality of life; 4) avoidance of acute headache medication escalation; 5) education and enablement of patients to manage their disease to enhance personal control of their migraine; and 6) reduction of headache related distress and psychological symptoms.

These general principles of management and fundamental goals of treatment also apply to children and adolescents and once the diagnosis of migraine headache is established a comprehensive treatment program should be implemented. Treatment options include use of: 1) acute or episodic medications; 2) prophylactic or preventive agents; and 3) non-pharmacologic or bio-behavioral interventions.

Modalities selected must be individually tailored to a particular patient's pattern and must also be flexible enough to accommodate a changing frequency.[27] Fundamental to this process is assessment of a patient's degree of disability or headache "burden"; which reflects an individual patient's frequency, duration, intensity, functional disability, quality of life, co-morbidity, and pain tolerance. The extent of medical management should be determined by assessment of the headache burden.

Pharmacologic Treatment

Treatment in children and adolescents can be divided on an acute basis as well as daily to prevent frequent recurring migraine attacks.

Treatment of acute attack of migraine

Recommended general principles for treatment of acute migraine headache as established in the previously published AAN Practice parameter include the following: 1) treat attacks rapidly and consistently without recurrence; 2) restore the patient's ability to function; 3) minimize the use of back-up and rescue medications; 4) optimize self-care and reduce subsequent use of resources; 5) be cost-effective for overall management; and 6) have minimal or no adverse events.[26] A summary of the evidence for treatment of acute attacks of migraine is presented in table-4.

Nonsteriodal anti - inflammatory agents (NSAIDs) and Acetaminophen

Acetaminophen and Ibuprofen are widely used for pain relief and sold without prescription in many countries.[27] Ibuprofen was been the most vigorously studied medication. Two double-blind, placebo-controlled class I trails have shown that Ibuprofen (7.5 to 10mg/kg) in childhood migraine is safe and effective.[28, 29]

One of the study compared Ibuprofen (10mg/kg) to Acetaminophen (15mg/kg) and a placebo.[28] At the 2 hour intent to treat endpoint, Ibuprofen provided alleviation of headache in 56% of treated patients compared to 53% for Acetaminophen and 36% for the placebo group. These differences between Ibuprofen & Acetaminophen were not statistically significant at this point. Complete resolution of headache was found in 60% of Ibuprofen-treated children and 36% of the Acetaminophen group vs. 28% of those who received placebo. This difference is statistically significant. Acetaminophen was observed to have a faster onset of action than Ibuprofen. No statistically significant adverse effects were reported for either drug in these studies.

5 - Hydroxytryptamine receptor agonists (Triptan agents)

Sumatriptan

Recent research in the mechanism of action in migraine involves the trigeminovascular system which causes release of vasoactive neuropeptides. 5 – Hydroxytryptamine (serotonin) presynaptic receptors control release of these neuropeptides, and postsynaptic receptors constrict vessel walls.[30]

Four studies compared Sumatriptan and placebo, including 3-high quality studies. A multicentered, double-blind and placebo-controlled study (age 12 to 17 years) compared 5mg, 10mg, and 20mg Sumatriptan nasal spray to placebo.[31] The 2-hour pain free response showed the 20 mg dose was statistically significant with 46% response rate compared with 25% for placebo (p<. 05). It also produced significant reduction in the migraine associated symptoms by 2 hours (p<. 05) and yielded a reduced headache pain recurrence rate compared with placebo overall.

A double-blind, placebo-controlled, two-way crossover study (class-1) included children aged 8 to 17 years (median 12.4 years). Treatment with Sumatriptan 10 mg (20 to 39 kg) and 20 mg (>40kg) was done with endpoint defined as improvement in headache at 2 hours. The primary endpoint was met in 64% of patients receiving Sumatriptan and in 39% of those receiving matching placebo (p=0.003). Complete pain relief was experienced by 31% of those treated with Sumatriptan and 19% receiving placebo (p=0.14). Secondary endpoints including use of rescue medications and patient preference also favored Sumatriptan (NS).[32]

Subcutaneous Sumatriptan has been studied in two open trials (class IV). The first trial in children 6 to 16 years used the 6 mg dose in children weighing >30 kg and 3 mg in children <30 kg.[33] It was effective in 64% of patients. A second subcutaneous trial in 50 patients aged 6 to 18 years using a dose of 0.06 mg/kg, found an efficacy of 78% with 26% responding within 30 minutes, 46% in 60 minutes, and 6% between 1 to 2 hours.[33] Headache recurrence rate was low as 60% to 90% boys responded, whereas 68% of girls responded.

One class 1 clinical trial including children aged 8.3 to 16.4 years (n=23) taking oral Sumatriptan tablet (50 to 100mg) failed to clearly demonstrate efficacy greater than matched placebo at the primary endpoint of pain relief at 2 hours (p=NS).[34]

Rizatriptan

Studies of Rizatriptan in children are limited. A single class I report (n=296) found no difference compared to placebo in pain relief in children aged 12 to 17 years at the 2-hour primary endpoint (Rizatriptan

66%; placebo 56%; p=0.79). Rizatriptan did demonstrate good tolerability and safety with adverse events being comparable to placebo (3 to 5%).[35]

Zolmitriptan

A class IV open-labeled multicenter trial of oral Zolmitriptan (2.5 to 5mg) in 12 to 17 years old adolescents (n=38) who had 276 migraine attacks found that treatment was well tolerated. Overall improvement in headache symptoms at 2 hours was 88% with 2.5 mg dose and 70% with the 5mg dose.[36] A pain free state was achieved in 66% patients.

Ergot Alkaloids

Limited reports have shown the usefulness of intravenous Dihydroergotamine (DHE) in an inpatient setting to break status migrainous or prolonged migraines in children.[37]

Dopamine antagonist

They were demonstrated to be effective in minimizing the nausea and vomiting, as well as the effects of the migraine.[38] For effectiveness, the IV formulation is superior to all of the formulation, while the oral route being ineffective or of limited effectiveness. An open labeled study in 20 children demonstrated the effectiveness of Prochlorperazine in the emergency department setting, with rehydrating fluids.[39]

Recommendations for the acute treatment of migraine in children and adolescents:

1. Ibuprofen is effective and should be considered for the acute treatment of migraine in children (level A).
2. Acetaminophen is probably effective and should be considered for the acute treatment of migraine in adolescents (level B).
3. Sumatriptan nasal spray is effective and should be considered for the acute treatment of migraine in adolescents (level A).
4. There are no data to support or refute use of any oral triptans in children or adolescents (level C).
5. There are inadequate data to make a judgment on the efficacy of subcutaneous sumatriptan (level-C).

Table-IV

Evidence summary for treatment of acute attacks of migraine

Drug, doses, ages	Class	n	Efficacy		p value	Adverse effects
NSAIDS and nonopiate analgesics			Active %	Placebo, %		
Ibuprofen						
10 mg/kg (4-16y)	I	88	68	37	<0.05	Infrequent
7.5 mg/kg (6-12y)	I	84	76	53	0.006	Infrequent
Acetaminophen						
15 mg/kg (4-16y)	I	88	54	37	<0.05	Infrequent
Triptans						
Sumatriptan						
Nasal 20 mg (6-14y)	I	14	85.7	42.8	0.03	Occasional
5,10,20 mg (12-17y)	I	510	66	53	0.05	
10,20mg (8-17y)	I	83	64	39	0.003	
Oral 50,100 mg(8-16y)	I	23	30	22	NS	Occasional
Subcutaneous						
3, 6 mg (6-16y)	IV	17	64	-	-	Occasional to frequent
0.06 mg/kg (6-18y)	IV	50	78	-	-	
Oral triptans						
Rizatriptan 5 mg (12-17 y)	I	296	66	56	NS	Occasional
Zolmitriptan 2.5 mg						
5 mg (12-17 yrs)	IV	38	85	(2.5 mg) 70(5 mg)	- -	Occasional

Preventive Treatment of migraine

General principles related to the goals of migraine preventive therapies are : i) to reduce frequency, severity and duration of attacks; ii) improved responsiveness to treatment of acute attacks; and iii) to improve function, reduce disability, and improve the patient's quality of life.

Cyproheptadine

One class IV retrospective study on the use of preventive agents for children and adolescents within one child neurology practice found that headache frequency was reduced from a mean baseline of 8.4 headaches/month to 3.7 headaches/month. In 83% of the children receiving Cyproheptadine (n=30) there was an overall favorable decrease in headache frequency and intensity plus acceptability of the agent. Common side effects of Cyproheptadine included sedation and increased appetite.

Antidepressants

Antidepressants have become a mainstay of migraine prophylaxis, although limited controlled data exist in children to validate this convention.

Tricyclic Antidepressants (TCA)

Amitriptyline is the most widely used TCA for headache prevention. Amitriptyline has been used for many decades for its antidepressive properties and was first recognized in the 1970s as an effective migraine therapy.[41,42, 43] Most of the studies using Amitriptyline in children have been open-label studies; no placebo-controlled studies have been done.

In an open-label study, Hershey et al[44] demonstrated that Amitriptyline at a dose of 1mg/kg/day resulted in a perceived improvement in more than 80% of the children, with a subsequently decreased headache frequency and impact on the children. One class IV retrospective study of the use of preventive agents for children and adolescents within one child neurology practice found that Amitriptyline produced a positive response rate of 89% (n=73). Positive response rate was defined as an overall decrease in headache frequency and intensity plus acceptability of the agent. Headache frequency was reduced from a mean baseline of 11 to 4.1 headaches per month.[40]

Selective Serotonin Reuptake Inhibitors (SSRIs) have been studied in the treatment of headache in adults, but they have not been studied in children. They are not as effective, however, as the TCAs. This is most likely because of nonselective effects of the TCAs, compared with the SSRIs, suggesting that a more global decrease in neurotransmitter reuptake inhibition is needed to manage hypersensitivity of childhood headache disorder.

The serotonin blocking agent Pizotifen was studied in a randomized crossover class I trail (n=47) with two 12-week treatment phases and no washout period between phases.[45] There was no significant difference in either headache frequency or headache duration between the placebo and Pizotifen-treated groups.

Antihypertensive agents

Beta-Blockers

ß-Blockers have long been used for prevention of childhood headaches. [46-47] They have been evaluated in three class II trials with conflicting results. One double blind crossover trial in children aged 7 to 16 years (n=28) using 60 to 120 mg of Propranolol per day found that 71% had complete remission from headache and another 10% experienced a 66% reduction in headache frequency among the Propranolol treated patients ($p<.001$). In the placebo group, 3 / 28 had complete remission and 1 of 28 experienced a 66% improvement.[46] A second trial failed to demonstrate preventive efficacy at doses of 80 to 120 mg/d and, in fact, significantly increased the average duration of headache in the Propranolol group.[48] A third trial compared Propranolol at a dose of 3mg/kg/day vs. self-hypnosis and found no benefit from Propranolol but significant improvement with hypnotherapy.[49]

Clonidine

The alpha-adrenergic agonist Clonidine was assessed in two studies. The first study had two phases. The initial pilot phase (n=50) had an open-label design and 40% of the children experienced extended relief from migraine attacks. The second phase, a follow-up, double blind, cross over design in 43 children, failed to demonstrate significant difference from placebo (class II).[50] The second study compared Clonidine to placebo in parallel-group trail (class II) at doses of 25 to 50 μg for 2 months (n=57).[51] There was no statistically significant difference between the

two groups with 9 of 28 patients in the Clonidine group and 9 of 26 in the placebo group experiencing freedom from headache attacks.

Calcium channel blockers

Calcium channel blockers are thought to exert their effects through selective inhibition of vasoactive substances on cerebrovascular smooth muscle.

Flunarizine

Flunarizine is a calcium channel blocker that has been evaluated in several trials for the prevention of childhood migraine. A double blind, placebo-controlled, crossover trial (class I) using 5 mg / day doses of Flunarizine (n=63) demonstrated significant reduction in headache frequency ($p<.001$) and decreased average headache duration ($p<.81$) compared to the placebo group.[52] A class II trail compared Flunarizine to Propranolol. Headache frequency was decreased in both treatments groups, but no statistically significant difference was detected between the trial agents.[53]

Nimodipine

One controlled, crossover trial including children aged 7 to 18 years (n=37) found inconsistent effects with Nimodipine (10-20mg TID) compared to placebo between the two treatment phases.

Anti convulsants

Considering current views concerning the pathophysiology of migraine involving a primary neuronal initiation and a cortical spreading depression, anti-convulsants have received increasing attention as an alternative therapeutic option.

Divalproex Sodium

One class IV study in 42 children (ages 7 to 16 years) found that over 80% were able to discontinue their abortive medications when treated with Divalproex sodium (15 to 45gm/kg/day.)[55] After 4 months of treatment, 75.8% of patients reported a 50% reduction in headache frequency; 14.2% had a 75% reduction and 14.2% achieved a headache free status. A second study using Divalproex sodium included children aged 9 to 17 years (n=10) with doses between 500 and 1000 mg. Both headache severity and frequency were reduced as compared by visual analog scale. Mean severity was reduced from 6.8 to 0.7 at the end of treatment. Mean headache attacks per month were reduced from 6/month to 0.7/month and mean duration of headache attacks was reduced from 5.5 hours to 1.1 hour following treatment. Side effects including dizziness, drowsiness, and increased appetite were noted but no serious side effects occurred in this small study.[56]

Conclusion

The calcium channel blocker Flunarizine was studied in one class I trail and is probably effective. The evidence is insufficient (class IV) to determine the efficacy of Valproic acid, Cyproheptadine, Amitriptyline, Topiramate and Levetiracetam for prevention of pediatric migraine. There is conflicting class II evidence regarding Propranolol and Trazodone. Clonidine, Pizotifen and Nimodipine were not shown to be more effective than placebo. A recent Cochrane database review of the medical literature also concluded that the calcium channel blocker Flunarizine is the only agent that has been studied in rigorous controlled trials and found to be effective.

Future directions

Standardized criteria for the diagnosis of migraine headaches in children and adolescents are needed in order to facilitate proper diagnosis and for the purpose of providing a case definition that could be used as part of therapeutic clinical trails. Standardized criteria of the response to treatment of migraine in children / adolescents need to be established that are related to the frequency, duration, severity and disability of headache. The safety and efficacy of currently available medications used to treat migraine headaches in adults need to be established in children and adolescents, particularly the dose and range in which these medications are deemed safe and effective to use. It is essential that multi-centered, placebo-controlled clinical trials should be conducted to assess the safety, tolerability, and efficacy of medications used for the acute and preventive treatment of pediatric and adolescent migraine.

Efforts must be made to develop novel and innovative study designs that will address the critical issue of high placebo response rates encountered in clinical trails in children and adolescents, which has proven to be the major impediment to demonstration of

efficacy. It will be important to understand the variations in effects of treatments in relation to age and sex.

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Misoprostol Versus Oxytocin in the Active Management of the Third Stage of Labour

N SULTANA[a], M KHATUN[b]

Summary:

Objective : A randomised controlled trial was performed in Sir Solimullah Medical College Mitford Hospital, a tertiary hospital in Dhaka City for one year to compare oral misoprostol with intramascular oxytocin in the prevention of post partum haemorrhage (PPH). Method: A total of 400 women were randomised to received either 400mg misoprostol orally or 10 I.U oxytocin intramascularly. The incidence of post partum haemorrhage and side effects were examined. Result: The demographic and labour characteristic were comparable. PPH occured in 3.80% of women given misoprostol and in 2.63% of those given oxytocin (P>0.50). Measured blood loss of more than 1000 ml occured 2.38% of the misoprostol group compared with 1.58% in the oxytocin group (P>0.50). There was no significant difference in the need for additional oxytocin drugs or blood transfusion in women of both groups. Significant side effect of misoprostol were shivering (P<0.01). Conclusion : Oral misoprostol is as effective as intramascular oxytocin in the prevention of PPH. Shivering and transient pyrexia were special side effects of misoprostol. Misoprostol has potential in reducing the high incidence of PPH in developing countries.

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Introduction :

Post partum haemorrhage (PPH) is a serious obstetrics problem and primary PPH is said to occur in about 5-8% of deliveries.[1] Maternal mortality in Bangladesh is about 3 per 1000 live birth.[2] Among the other causes haemorrhage ranging 20-25% of cause of maternal mortality and 12% due to antepartum haemorrhage and post partum haemorrhage. PPH is one of the leading cause of maternal mortality in developing country. [3,4] The common cause of PPH is uterine atony (80%).[1] The underlying principle in active management is to excite powerful uterine contraction following birth of the head or anterior shoulder of the baby, which minimise the blood loss in third stage approximately to $^1/_5$th.[3] Prostaglandin are hormone naturally present in the uterus that causes contraction during labour.[5] Misoprostol is a synthetic 15-doxy 16 hydroxy-16 methyl analogue of naturally occurring prostaglandin E_1 (PGE_1). Because of its prostagladin activity it is also very useful for cervical ripening and induction of labour. [6,7] It is also used in 1st and 2nd trimester abortion and has been shown in several randomised placebo controlled trial to significantly reduce risk of PPH and also control of PPH.[6] It is stable at room temperature, low cost, easily administrable, available in tablet form and definitely advantageous than the other PGs with few systemic side effect. Its absorption is rapid and effect on the post partum uterus has been shown to be rapid. [8]

Our aim was to show the effectivity of oral misoprostol versus oxytocin for the active management of third stage of labour to reduce the risk of PPH.

Materials and Methods :

This is a prospective longitudinal study was conducted in the Gynae department of Sir Solimullah Medical College Mitford Hospital during the period of January 2003 to December 2003. A total of 400 (Four) hundred parturient women were randomised to received either 400 microgram (μg) of misoprostol orally or 10 I.U oxytocin intramascularly just after cord clamping labouring women either nulliparous or multiparous with no known risk for excessive third stage blood loss, vertex presentation, no previous caesarean section delivery, induced, augmented or spontaneous labour were included. Among the 400 patients, 210 patients were selected for misoprostol and 190 were selected for intramascular oxytocin.

a. Dr. Nilufar Sultana, MBBS, FCPS (Gynae), Assistant Prof. (Gynaecology), Begum Khaleda Zia Medical College, Dhaka.

b. Prof. Mahmuda Khatun, MBBS, FCPS (Gynae), Professor & Head of the Dept. of Gynae & obst., SSMC & Mitford Hospital, Dhaka.

Address of Correspondence: Dr. Nilufar Sultana, MBBS, FCPS Assistant Prof. (Gynaecology), Begum Khaleda Zia Medical College, Dhaka.

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Outcome measures were incidence of post partum haemorrhage, estimation of average blood loss. the length of the third stage of labour, the percentage of women requiring manual removal of Placenta, further oxytocin and blood transfusion and the side effect of both the groups. Blood loss was estimated on approximate basis by the delivering physician after collecting blood within a plastic bowl.

Statistical analysis was performed using SPSS Programme. Data were analysed by chi-square test (x_2) to compare frequency distribution. A difference was considered statistically significant at p value 0.05 level.

Results:

Among the 400 patients, 210 were assigned to receive misoprostol and 190 received oxytocin randomely. At randomization the two group were well balanced and comparable for demographic and labour characteristics.

In misoprostol group significant number of patient developed shivering, which was statistically significant than the oxytocin group. Other parameters of both groups showed no significant difference.

The result of both groups are shown in the following tables. n=total number of patient. no=number.

Table-I

Post partum haemorrhage due to uterine atonicity.

Misoprostol(n=210)		Oxytocin (n=190)		*P* value	Significance
No. of patient	Percentage	No. of patient	Percentage		
8	3.80	5	2.63	*P*>0.50	Not Significant (NS)

x^2= 0.4409 df. 1, P>0.50

In table 1, 8 patient in misoprostol group and 5 patient in oxytocin group develop PPH, which is not significant statistically.

Table-II

Estimated Blood loss

Character	misoprostol (n=210)	Oxytocin (n=190)	Significance
Average blood loss in each patient	325.4 ml	375 ml	NS

Table II shows average blood loss in each patient in both group 325.4 ml and 375 respectively which is not significant statistically.

Table-III

Measured blood loss > 1000 ml occurred

Misoprostol(n=210)		Oxytocin (n=190)		*P* value	Significance
No. of patient	Percentage	No. of patient	Percentage		
5	2.38	3	1.58	*P*>0.50	Not Significant (NS)

x^2= 0.328, P>0.50

In this table; more than 1000 ml blood was lost in 5 & 3 patients in misoprostol & oxytocin group respectively which is not significant.

Table-IV

Additional Oxytocin drugs require before and after separation of placenta.

Misoprostol(n=210)		Oxytocin (n=190)		*P* value	Significance
No. of patient	Percentage	No. of patient	Percentage	*P*>0.50	(NS)
5	2.38	6	2.83		

x^2= 0.1978, P>0.50

Additional oxytocin required for further uterine contraction in 5 and 6 patients respectively in two group which is not significant statistically.

Table-V

Length of third stage of labour

Misoprostol (Time)	Oxytocin (Time	Significance
4 min 49 sec.	5 min	NS

Time required for the separation of placenta in each patient of both group is not statistically significant.

Table-VI

Patient required manual removal of placenta

Misoprostol(n=210)		Oxytocin (n=190)		*P* value	Significance
No. of patient	Percentage	No. of patient	Percentage		
2	0.95	1	0.05	*P*>0.50	(NS)

x^2= 0.2456, df 1, P>0.50

Manual removal of placenta require only 2 patients in misoprostol & I in oxytocin group respectively which is statistically not significant.

Table-VII

Pain during third stage of Labour

Misoprostol (n=210)		Oxytocin (n=190)		*P* value	Significance
No. of patient	%	No. of patient	%		
5	2.38	4	2.10	*P*>0.50	NS

x^2= 0.1978, P>0.50

Here only 5 and 4 patients developed pain respectively in both group which is also not statistically significant.

Table-VIII

Side effect of both groups

Character	Misoprostol (n=210)		Oxytocin (n=190)			
	No. of patient	%	No. of patient	%	*P* value	Significance
Shivering	13	6.19	2	1.05	P<0.01	Significant
Diarrhoea & fever	4	1.90	2	1.05	P<0.50	NS

x^2= 7.296, df 1, P<0.01 (Significant)

x^2= 7.488, df 1, P<0.50 (not significant)

This table shows, 13 patients in misoprostol group 2 patient in oxytocin group developed shevering after use of drugs. This is statistically significant. Diarrhoea & fever develop about 4 & 2 patient respectively in both group which is not statistically significant

Discussion

Misoprostol, is a synthetic PGE_1. analogue. Its FDA approved indication is for the prevention of stomach ulcer in patient taking non steroidal anti-inflamatory drugs. Because of its prostaglandin activity it is also used for reducing the risk of PPH and also to control of PPH.[6,7] It is available in tablet form and can be given orally and rectally for the active management of third stage of labour. In this study, we gave 400 microgram (μgm) of misoprostol orally in one group (n=210) and intramascular oxytocin 10 I.U. in another group (n=190). The incidence of PPH in misoprostol group and oxytocin group were 3.80% versus (vs) 2.63% which is comparable to another study e.g. 1% us 0% respectively done by OboroVO, Tobowei TO.[9] The estimated average blood loss in each patient of this study was 325.4 ml in misoprostol group and 375 ml in Oxytocin group respectively which coincide with 345 ml vs 417 ml in another study done by Surbek DV et al.[10] The length of third stage labour in each patient in present study was 4 minute 49 sec in misoprostol group and 5 minute in oxytocin group which is less than another study e.g 8 minute vs 9 minute but similar regarding statistical significance because both studies shows no significant difference between two group.[10] Blood loss more than 1000ml in present study was 2.38% vs 1.58% which is comparable to another study e.g. 3.7% vs 2% done by kundodyiwa Tw et al. [11] The additional oxytocin before or after placental separation was used less often in both groups such as 2.38% vs 2.63% which is comparable to another study 16% vs 38% e.g. both study shows no statistically significant difference.[10] Regarding blood transfusion, it was 1.90% vs. 1.58% respectively in this study which is comparable to study done by kundodyiwa Tw et al.[11] The manual removal of placenta required 0.95% vs 0.53% respectively in this study which is also similar to one study.[10] There were no significant difference in pain during third stage of labour, post partum fever or diarrhoea but shivering was more in the misoprostol group which was observed in present study and all other studies which is statistically more significant than the oxytocin group. [9,10,11] From above discussion it has been observed that in all the parameter except shivering there were no significant difference between the misoprostol group and oxytocin group.

Conclusion :

Oral misoprostol is as effective as intramascular oxytocin in the prevention of PPH. So, oral misoprpstol can replace intramascular oxytocin in the active managment of third stage of labour in low risk women in developing countries especially as it is administered orally and it is thermostable in tropical conditions. Shivering and transient pyrexia were specific side effects of misoprostol which has potential in reducing the high incidence of PPH in developing countries.

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Percutaneous Coronary Intervention (PCI) in the Era of Drug-Eluting Stents

NAM MOMENUZAMAN[a], F BEGUM[b], F MALIK[c], S GHAFUR[d], N AHMED[b], M BADIUZZAMAN[b]
SM HOSSAIN[b], MH RAHMAN[d] , MIR NESARUDDIN AHMED[d]

Summary:

Angioplasty opened the stenotic coronary artery but faced complication like abrupt vessel closure. Deployment of bare metal stent within the lesion solved the problem but another complication like restenosis emerged. Neointimal hyperplasia and vessel wall remodeling were identified as the underlying mechanism and lead to the development of drug eluting stent. In the selected patient group, drug eluting stent (sirolimus and paclitaxel) are proved to be extremely promising in respect to reduction of target vessel failure, clinical restenosis (target vessel revascularization), binary restenosis, stent thrombosis and other parameters. Importantly initial positive outcome persisted in the subsequent later follow ups. Outcome in the unfavourable groups are also encouraging but needs few more studies and follow ups. There are scopes for future improvement also. With the immense success, drug eluting stents are increasingly used worldwide and becoming an integral part of percutaneous coronary intervention.

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Introduction

Stent represents a major advance in the treatment of obstructive coronary artery disease since the advent of percutaneous transluminal coronary angioplasty (PTCA)[1]. PTCA opened the stenotic lesion in coronary artery with potential promise but noted abrupt artery closure in 30% cases needing repeat procedure or emergent life saving bypass graft surgery. Advent of bare metal stent (BMS), an intravascular scaffold, mounted on a balloon and opened once inside the artery, virtually solved the problem by preventing vessel shrinkage[2], but faced thrombotic complications (subacute stent thrombosis) in 20-25% cases[3] in the early part. High pressure stent deployment and use of antiplatelets, brought down the complications to ? 0.5%[1].

Although the success and safety of stenting dramatically increased, in-stent restenosis persisted as a hindrance to stenting. Incidence varied from 8-80% at 06 months[2]. Restenosis is higher in short lesions and large vessels and even more in high risk groups.

Restenosis is the arterial wall's healing response to mechanical (barotrauma) injury induced by PTCA or stent deployment, not a recurrence of coronary artery disease. Restenosis comprises two main processes, neointimal hyperplasia (arterial injury, immune response, smooth muscle cell migration/proliferation, intimal proliferation, extra-cellular matrix deposition, ECM and healing) and vessel remodeling (change in vessel dimension due to mechanical recoil from balloon expansion, less important in case of stenting)[4].

Different treatment strategies were tried to reduce the restenosis rate with repeat balloon angioplasty, rotational atherectomy, laser angioplasty, cutting

a. Dr. N A M Momenuzzaman, D-Card, MD (Cardiology). Associate Professor and Chief of Cardiac Cath-Lab and Interventional Cardiology, Department of Cardiology, National Heart Foundation Hospital and Research Institute, Dhaka, Bangladesh

b. Dr. Fatema Begum, FCPS (Med), MD (Cardiology). Dr. Nazir Ahmed, MD (Cardiology), Dr. Md. Badiuzzaman, FCPS (Med), MD (Cardiology), Dr. S M Hossain, FCPS (Med), MD (Cardiology) Consultant Cardiologist, Department of Cardiology, National Heart Foundation Hospital and Research Institute, Dhaka, Bangladesh

c. Dr. Fazilatunnesa Malik, FCPS (Med), MRCP, FRCP. Associate Professor, Department of Cardiology, National Heart Foundation Hospital and Research Institute, Dhaka, Bangladesh

d. Dr. Shakil Ghafur, DTCD, MD (Cardiology), Dr Mir Nesaruddin Ahmed, MD (Cardiology) Assistant Professor and Dr. M H Rahman, FCPS (Med), Junior Consultatnt. Trainee in Invasive Cardiology, Department of Cardiology, National Heart Foundation Hospital and Research Institute, Dhaka, Bangladesh.

Address of correspondence: Dr. N A M Momenuzzaman, Associate Professor, Chief of Cardiac Cath-Lab and Interventional Cardiology, National Heart Foundation Hospital and Research Institute, Plot # 7/2, Mirpur, Dhaka-1216, Phone 8053935-6, Ext:253, Fax: 880-2-8016694, Mobile: 01711529539, E-mail: momenuzzaman@hotmail.com

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balloon angioplasty or repeat stenting and currently brachytherapy, but the rate still remains high. Mechanical approaches appear to be too simplistic to prevent in-stent restenosis as BMS induces neointimal hyperplasia though having positive scaffolding advantages. Interfering with molecular basis of this enhanced proliferative response appears to be a much more effective approach for modifying healing process after stenting[2]. Potential toxicity of systemic pharmacotherapy and inadequate drug concentration at the injury site lead local drug delivery system to emerge[1]. Although catheter-based drug delivery has mixed results (rapid washout of the drug and the potential flow or pressure mediated vessel wall injury)[5], recently the emergence of drug-eluting stent (DES) technology offered a new perspective for the pharmacological prevention of restenosis[1].

The application of DES technology to improve clinical outcomes following percutaneous coronary intervention (PCI) represents one of the greatest success stories in cardiology. A variety of drugs were tested which interrupt the biological process that caused restenosis. DES is a normal metal stent coated with such pharmacological agent and proved to be extremely successful in reducing restenosis from the 20-30% range to a single digit[6,7]. There are three major component of DES; type of stents that carries the drug coating, method by which the drug is delivered to the arterial wall for time release (polymer or other) and the drug itself (to prevent restenosis)[1].

Although research and clinical practice employing DES started few years back, FDA approved first DES to use in USA in April 2003 and the practice is ever increasing every year all over the world[8]. DES has been classified according to its properties; anti-infammatory (corticosteroids, tranilast), anti-thrombotic (NO, GP IIb/IIIa inhibitors, hirudin, iloprost), immunosuppressive (sirolimus, rapamycin analogue evorlimus, ABT-578, tacrolimus, mycophenolic acid), anti-proliferative (paclitaxel, angiopeptin), modulator of ECM (batimastat) and promoter of healing (NO, VEGF, estradiol) [1,9]. Their action is harmless to normal cells.

Among them, two DES had undergone a number of studies and gained acceptance and increasingly practiced, eg. sirolimus eluting stents (SES) and paclitaxel eluting stents (PES)[9]. Few more like ABT 578, evorlimus and trapidil eluting stents have entered the market and their use is increasing.

Sirolimus

Sirolimus (Rapamycin) is a macrolide antibiotic, initially used for prophylaxis against renal transplant rejection[2]. Shortly afterwards, the SES was implanted in human coronary arteries[10].

Mechanism of action[2]:

Rapamycin is actually a pro-drug that ultimately binds to a specific cell cycle-regulatory protein, the mTOR and inhibits its activation. mTOR is involved in the transition between the G_1 and S phase where DNA replication occurs and lead to cell division. Rapamycin, thus have a cytostatic effect and induce cell cycle arrest in late G_1 phase and may inhibit cellular migration at higher doses and thus inhibits all phases of restenosis cascade.

Rapamycin acts at very low nanomolar level, 140 ?gm/cm^2 (180 ?gm/18 mm stents)[11]. Both fast-release (< 15-day) and slow-release (? 28-day) formulations are available. Only slow release formulations were randomly tested and now commercially available.

Several clinical studies were conducted employing SES. First of such study was FIM (**F**irst-**I**n-**M**an) in 1999 and another study RAVEL (**RA**ndomized study with the sirolimus-eluting Bx **VEL**ocity balloon-expandable stent).

Recently published one year outcome of SIRIUS (**SIR**ol**I**m**US**-coated Bx Velocity stent in the treatment of patients with de novo coronary artery lesions) trial shows immense benefit of SES over BMS[6]. This multicenter randomized, double-blind study enrolled patients with more liberal inclusion criteria and dividing patients randomly undergoing PCI assigned to SES and control BMS. The primary end points were target vessel failure, TVF (includes TVR, cardiac death, Q-wave and non-Q-wave MI not clearly attributed to a vessel other than the target vessel) and clinical restenosis (target lesion revascularization, TLR). Secondary end points were MACE or repeat TLR at 30 days, 9 and 12 months after index procedure.

At 9 month follow-up clinical restenosis, defined by TLR was significantly lower in the SES group as well as TVF and stent thrombosis rates. In-stent binary restenosis rate and in-segment restenosis were also markedly lowered[12]. At 12 months, this significant difference remained with only a minimal increase in the end points in either group. Strikingly TLR rises but still lower than control group (Table I).

Table-I

Comparison of key outcomes in SIRIUS Trial

	SES	BMS	Significance (p)
TLR at 9 month	4.10%	16.60%	<0.001
TVF at 9 month	8.80%	21.00%	<0.001
Stent thrombosis at 9 month	0.40%	0.80%	NS
In-stent binary restenosis at 9 month	3.20%	35.40%	NS
In-segment restenosis at 9 month	8.90%	36.30%	NS
Rise of TLR at 12 month	4.1% to 4.9%	16.6% to 20.0%	

SES: Sirulimus eluting stent, BMS: Bare metal stent, TLR: Target lesion revascularization, TVF: Target vessel failure

In-stent late loss was 0.17 mm and in-lesion late loss was 0.25 mm. DM, reference-vessel diameter and lesion length were the significant determinant of TLR. 70-80% relative reduction in clinical restenosis was achieved with SES irrespective of their presence. The restenosis rate was a bit higher in SIRIUS trial to that of RAVEL because of inclusion of more adverse baseline characteristics for restenosis.

The SIRIUS trial confirms benefit with SES in a group of patients and lesions at increased risk of restenosis for up to 1 year with out any evidence of untoward effect. Similar improvement in outcome in other patient groups at even higher risk for restenosis, including in-stent restenosis, total occlusions and multivessel stenting remains to be determined.

Paclitaxel

Paclitaxel are effectively used in the treatment of various cancers. This is a deterpenoid compound with a nucleus and a side chain. Modification of the side chain produces a more potent analogue, docetaxol. Both have unique pharmacological action as inhibitors of mitosis by promoting microtubule formation and assembly and antagonizing disassembly, which halts mitosis (G_2/M phase)[2]. As such they lead to reduced vascular cell proliferation, migration and signal transduction[13].

A series of clinical trial (TAXUS-I through IV) were designed to test the feasibility and effectiveness of polymer based PES with various release kinetics comparing with BMS in a variety of clinical settings.

TAXUS-IV[7]

This is a pivotal large, double blind, multicenter, randomized trial testing the efficiency of slow release (SR) PES in patients with single de novo lesion by comparing control BMS. With some major exclusion criteria, randomization was done according to DM, vessel size and type of stents. Clinical follow up were scheduled at 1, 3, 4 and 9 months and yearly thereafter for 5 years. Angiographic follow-up were done at 9 month and 12 month. The primary end point was ischemia driven TVR at 9 months.

Follow up at 12 month revealed the significant reduction of TLR, TVR and restenosis frequency in PES and as such the rates of composite TVF and MACE. The rates of cardiac death, MI and stent thrombosis (all occurred within first 6 months, no late stent thrombosis occurred 6 months after clopidogrel discontinuation) were similar between two groups (Table II).

Table II

Comparison of key outcomes in TAXUS IV Trial

	PES	BMS	Significance (p)
TLR reduction at 12 month	4.40%	15.10%	<0.001
TVR reduction at 12 month	7.10%	17.10%	<0.001
Restenosis at 12 month	7.60%	26.60%	<0.001

PES: Paclitaxel eluting stent, BMS: Bare metal stent, TLR: Target lesion revascularization, TVR: Target vessel revascularization

The relative reduction in TLR rates at 12 month with PES was independent of vessel location, reference vessel diameter, lesion length, diabetic status, female gender and no prior myocardial infarction. There was no safety concern emerged in the PES group during this extended follow up period. The PES (TAXUS Stent) markedly reduced the need for repeat

revascularization procedure particularly if adjunctive pharmacological strategies can curtail periprocedural adverse events.

Absolute and relative rate of composite MACE increased in PES group observed during follow up period. So extended follow up for several years and enrollment of greater number of patients are needed to study any late hazards. Additional studies are also needed to demonstrate the safety and efficacy of this device in more complex and high-risk lesions not included in this study.

Drug-Eluting Stents: what future holds

Initial randomized trials employing DES, enrolled patients with single de novo lesions, intermediate length, larger vessel diameter, single stent in the absence of high risk criterias[6,7,8]. Restenosis rate in current trials seems to be higher, than previous because of enrolling patients with more risk factors, but still significantly less when compared with BMS[6].

Although 70-80% relative reduction in clinical restenosis with DES irrespective of lesion length, reference vessel diameter, diabetes, LAD lesion, post stent restenosis (few examples of high risk lesions), we can not recommend routine use of DES in such patient subgroups[6,12]. We need to continue the observational follow up for couple of years more whether the same persists. Again it is time to determine definitively whether similar marked improvement with DES will be observed in other groups at even higher risk for restenosis, including those with in-stent restenosis, total occlusion, multi lesion/multi vessel disease (specially in diabetics), large (> 3.5 mm) and small (< 2.5 mm) vessel diameter, saphenous vein grafts, diffuse disease (full metal jackets), longer lesions, left main disease, side branch or bifurcating lesions, post brachytherapy restenosis and also in acute MI (primary PTCA)[6, 8,12].

Concerns and controversies

Till today, there are few concerns about the immensely successful DES, like safety profile of stents coated with potent antimitotic agents, polymer related hazards, accelerated atherosclerosis, delayed stent thrombosis, lack of a long-term effect on restenosis (> 2 years) and being very expensive. There are few limitations as well like they can not be used in patients with allergy to sirolimus, polymethacrylates or polyelefins, requires anti platelet medication for several months (particularly for paclitaxel), potential adverse effects of sirolimus, procedural less versatility, originally more expensive.

Future development

Although the DES has gained acceptance for use in the treatment of obstructive coronary lesion, continuous endeavor is going on to improve this technology further to improves its restenosis coverage. Following are the proposals:

Pharmacological modulation: Stent coated with Estradiol improves vascular healing, reduce SMC migration and proliferation and promote local angiogenesis[14].

Tissue engineering: Tissue engineered perivascular endothelial cell implants can identify heparin sulphate proteoglycan perlecan as a potent inhibitor of neointimal hyperplasia after deep vascular injury[15].

Gene and stem cell therapies: Endothelial-derived NO helps in vascular healing by attenuating inflammation and inhibiting SMC proliferation and migration[16]. Genetic intervention induces increased vascular reactivity of the injured vessel resulting in reduced neointimal hyperplasia.

Vascular endothelial growth factor (VEGF) is a potent vascular permeability factor and is an endogenous regulator of endothelial integrity after injury and thus protect artery from disease progression[17]. Animal studies revealed positive outcome after balloon and stent injury following VEGF-gene-eluting stents with a future prospective of human trial[18,19,20,21].

The transplantation of endothelial progenitor cells (EPCs) can enhance endothelial cell regeneration, neovascularization or both[2].

Somatic stem cells in the bone marrow are capable of differentiating into vascular endothelial cells and SMCs, and home to sites of vascular damage following vascular damage. Antibodies against their membrane receptors at the site of vascular injury has been proposed[2]. Antibody-coated stents implanted in human coronaries in multicenter pilot study (HEALING) without adverse reactions, but long-term outcomes are pending.

Procedural modification: Direct stenting is associated with more than 80% reduction in the vessel wall regeneration with a two fold reduction in intimal thickening as compared with predilatation[22]. Improvement of stent and balloon design and deployment technique is going on to reduce their biological repair response.

Combination chemotherapy: This is effective in reducing neointimal thickening. Combination of hirudin and ilioprost blended with polylactic acid polymer can be loaded onto a stent[2]. Paclitaxel-NO donor conjugate-eluting stent is more beneficent than PES alone[2].

Gene therapy combined with pharmacologic therapy modulate distinct ligand-receptor signaling system. Oral Imatinib mesylate (STI571/gleevec) improves the efficacy of local intravascular VEGF-C gene transfer in reducing neointimal growth[23].

Customized stents: These stents allow both temporal and spatial control of drug release. They cause early release of antithrombotic prohealing agent in the luminal surface and thus promote healing and stent endothelialization, where as an anti proliferative agent (cell cycle inhibitors) could be released intramurally and slowly[2]. The Conor stents has individual polymer inlays for drug reservoirs that can be loaded with different compounds[24].

Polymeric biodegradable stents: Noninflammatory biodegradable polymeric stent, where polymer dissolves slowly after implantation are promising technologies that can be loaded with large amount of drugs or multiple agents[2,8]. These stent provide initial scaffolding support to prevent vessel recoil and negative recoil without undesirable continuous vessel trauma caused by a permanent foreign body and adverse effect of retained drug or polymer.

Improvement of stent: Numerous new platforms, such as ultra-low-profile, thin-strut stent built from cobalt chromium and other novel materials, may reduce vascular injury and improve deliverability[8].

Conclusion

Drug eluting stent promises to be a huge leap in the treatment of obstructive coronary atherosclerotic disease. DES is an emerging technology that has wide scale of implications with scope for future development. Evidence on the clinical efficacy and safety of SES and PES are continuously being released. Positive outcome are seen even in the unfavorable candidates. Given the trend of cardiovascular disease in the western world, DES usages will continue to grow.

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EDITORIAL

Preparing for the next Influenza Pandemic: Bangladesh Perspective

The threat of an influenza pandemic looms large over the world. Many experts believe that another influenza pandemic is virtually impossible to avoid. Within one hundred years the world has witnessed three major influenza pandemics: the 1918-19 "Spanish flu", the 1957-58 "Asian flu," and the 1968-69 pandemic or "Hong Kong flu". The most devastating of the three, the 1918-19 "Spanish flu" was responsible for an estimated 40 million death worldwide. The currently circulating *H5N1 subtype of Influenza A* virus is considered as the most likely cause of the next influenza Pandemic. The spread of the virus to Europe and Africa and continued human infections in Southeast Asia have further heightened pandemic concern. The world still remains at *Phase 3 of the Pandemic Alert Period* as declared by WHO since January 2004. That indicates the novel influenza virus subtype (H5N1) is causing sporadic human cases, but yet develop capacity to transmit efficiently among humans. Highly pathogenic Avian Influenza (H5N1) among poultry was first reported in Bangladesh in later half of March 2007. Since then HPAI/H5N1 has been reported in 12 districts both in organized and backyard poultry including home-reared pigeons in some affected areas. To mitigate the spread of HPAI/H5N1, department of Livestock culled more than 100000 poultry in the affected regions. So far no human case has been reported in Bangladesh. The *H5N1 subtype of Influenza A* virus is novel to human and able to cause serious disease in human with a high case fatality rate approaching 60%, but it has yet to acquire the ability to transmit efficiently among the human. Most of the human infections to date have resulted from direct contact with infected poultry, particularly back yard poultry. There are several reports of human to human transmission of H5N1, particularly among close household contacts, but evidence gathered so far indicated that it has not yet acquired the capability to maintain a sustained chain of transmission among humans. Once this particular virus acquires the ability to maintain a sustained human to human transmission, pandemic will ensue. Therefore preparedness for a possible influenza pandemic caused by *Highly Pathogenic Avian Influenza A subtype H5N1* (HPAI/H5N1) has become a global priority.

Preparedness for the pandemic influenza in Bangladesh has commenced from mid 2005. In 2006, the "National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan Bangladesh 2006-2008" was approved by the government. As per proposed plan in during the phase where only animal infection of H5N1 is reported, ministry of fisheries and livestock will lead the pandemic preparedness campaign, but once a single human case become notified, ministry of health and family welfare will take the lead. However during pandemic the highest executive of the government will take the help of the program. To supervise and implementation of the plan several committees has been formed from national to upazila level both in the ministry of livestock and in the ministry of health and family welfare with multisectoral committees for coordination at all levels. All divisional, district and upazila level health managers of the country has been oriented on avian/human pandemic influenza through series of workshops started from early 2006. The Ministry of Health and Family Welfare (MOHFW) through Directorate General of Health Services (DGHS) has already stockpiled anti-viral drug Oseltamivir and other supportive medication for management and prophylaxis of avian influenza H5N1. As delineated in the plan, isolation units in district hospitals with ventilators for respiratory support are currently in the process of development. WHO has already procured and in the process of further procurement of adequate number of Personal Protective Equipments (PPE) for rapid response teams and in case of suspected outbreaks. Anti-viral

vaccines for seasonal influenza are also being stockpiled for health care workers and rapid responders to decrease the possibility of mixing of avian and human influenza viruses. Institute of Epidemiology, Disease Control and Research (IEDCR), which is the nationally mandated organization for outbreak investigation, has been identified as the focal institute for pandemic preparedness activities. To this end Initiatives have been taken to set up a modern Influenza referral laboratory with skilled laboratory personnel at IEDCR. Soon the nationwide surveillance of *Influenza Like Illness (ILI)* will begin in 18 designated district hospitals as sentinel sites and over time it will phase-wise cover all 64 districts Hospitals for surveillance of *Viral Pneumonia*.

The national plan has also proposed an eleven member core District Rapid Response Team (DRRT) headed by the civil surgeons in each districts. The primary responsibility of the DRRT is to respond to any outbreak of suspected Avian Influenza Infection in human and supports the initial 72 hours of investigation. IEDCR has already completed intensive module based training of all 64 DRRTs on rapid response, infection control and risk communication on Avian/Human Pandemic Influenza. District based training of the Upazila Rapid Response Team (URRT) will soon be started. This training will also reach least 50 health care workers and volunteers from each union, who will take part in active dissemination of awareness messages to the community, that are already been developed by Technical Working Group on risk communication.

Although we know that the widespread use of a pandemic vaccine should be the central strategy for protection of human health during a pandemic event but the vaccine will not be available during the initial peak period of a pandemic. Even then more time will be elapsed until the vaccine become available to the resource poor countries. The other option we are left with is the use Oseltamivir for treatment and prophylaxis.. Therefore recognition of the cluster of cases and early initiation of management is of pivotal importance. Oseltamivir resistance H5N1 cases has been identified in Viet Nam and many experts apprehend that possibility of rate of resistance to Oseltamivir will also be very high during pandemic scenario. Therefore it is imperative that the use of this drug must be rigorously controlled. Currently the drug is available only thorough Government health system and to be used in accordance to the approved guidelines. It should remain as such because indiscriminate use of this drug will result in more resistance through a selection pressure on the circulating influenza viruses. In absence of vaccine this drug is crucial for pandemic containment.

It is also vital to prepare contingency plan clearly outlining strategies for strengthening health system response capacity in clinical care and isolation practices in light of perceived enhanced demand. We need to ensure medical readiness by ensuring those health care workers, including physicians, nurses, and all allied health personnel are able to perform their duties during an influenza pandemic. By its very nature, their work puts these individuals at higher risk during a pandemic. To this end, the Government needs to ensure the availability of influenza vaccinations, antiviral treatment and prophylaxis, a possible risk allowance plan to eliminate barriers to health care workers' participation during an influenza pandemic. There is also strong need to act now to establish a national strategy to ensure a coordinated continuum of care during a pandemic. This involves building national, regional, and local health care systems capable of responding to a mass casualty event by establishing the protocols necessary to develop and sustain medical surge capacity though providing training, education of the medical personnel and developing a detailed, evidence-based guidelines. It is also imperative to institute and strengthen safe respiratory hygiene practices and promote adoption of standard and transmission based infection control precaution practices in health care settings as well as at the individual and community level. National guidance on community mitigation measures during pandemic such as social distancing, school closures, and isolation should also need to be developed in collaboration with key stakeholders and technical experts. Besides we also need to focus on our effort to continue to strengthen leadership capacity for pandemic influenza response by regularly outlining the scope of authority and key responsibilities by holding table top and other

exercises at different levels, involving technical experts and stakeholders and issuing and updating national guidelines for planning based on the latest science and ethical guidelines. As proposed in the national plan public health laws also need to be reviewed and made necessary revision to accommodate the framework and authorities through which the government will take measures to contain the pandemic. The Pandemic Preparedness Plan demarcated several essential activities as well as significant amount of new funding that will result in improved readiness. However, preparedness in all level and response targets cannot be achieved without increased, long-term sustainable funding. Many of the activities being requested of district and Upazila health authorities and hospitals and other national and local institutions require the certainty that ongoing funding is assured. Continuing investments in activities leading to national preparedness will ultimately have collateral benefits in defending against other emerging and re-emerging diseases that are perpetual threat to our country.

Prof. Mahmudur Rahman
Director
Institute of Epidemiology Disease
Control & Research
Mohakhali, Dhaka

(J Bangladesh Coll Phys Surg 2007; 25 : 53-55)

COLLEGE NEWS

(J Bangladesh Coll Phys Surg 2007; 25 : 98-111)

Examination News:

Result of FCPS Part I, FCPS Part II and MCPS Examination held in January, 2007 are given below:

4630 candidates appeared in FCPS Part-I Examination held in January, 2007, of which 759 candidates came out successful. Subject-wise results are as follows:

FCPS Part- I Examination:

Sl No	Subject	No. of candidates appeared	Pass	Fail	% of Pass
1	Medicine	1504	200	1184	13.30
`2	Surgery	775	142	563	18.32
3	Paediatrics	527	132	364	25.05
4	Obst.and Gynae	1102	176	844	15.97
5	Otolaryngology	75	24	47	32.00
6	Opthalmology	101	7	89	6.93
7	Psychiatry	17	1	16	5.88
8	Anaesthesiology	68	3	63	4.41
9	Radiology & Imaging	110	7	98	6.36
10	Radiotherapy	8	0	8	0.00
11	Dermatology and Venereology	116	12	96	10.34
12	Physical Medicine & Rehab.	27	7	19	25.93
13	Dentistry	137	40	87	29.20
14	Family Medicine	7	1	5	14.29
15	Haematology	21	3	18	14.29
16	Biochemistry	1	0	1	0.00
17	Microbiology	16	2	13	12.50
18	Histopathology	18	2	15	11.11
	Grand Total	**4630**	**759**	**3530**	**16.39**

702 candidates appeared in FCPS Part II Examination in different subject. List of candidates who satisfied the board of examiners is as follows:

Roll No.	Name of Candidate	From where Graduated	Speciality
79	Dr. Tushar Kanti Barman	Dhaka Medical College, Dhaka	Medicine
102	Dr. Md. Zahid Alam	Rajshahi Medical College, Rajshahi	Medicine
188	Dr. Subrata Datta	Sir Salimullah Medical College, Dhaka	Medicine
701	Dr. A.T.M Iqbal Hasan	MAG Osmani Medical College, Sylhet	Cardiology
231	Dr. Abu Taher Mohammad Nurul Amin	Dhaka Medical College, Dhaka	Surgery
271	Dr. Md. Abul Kalam Azad	Mymensingh Medical College, Mymensingh	Surgery
273	Dr. G.M. Nazimul Haque	Sher-e-Bangla Medical College, Barisal	Surgery
285	Dr. Mohammad Jahangir Alam	Sher-e-Bangla Medical College, Barisal	Surgery
303	Dr. Md. Nur Hossain Bhuiyan	Chittagong Medical College, Chittagong	Surgery
313	Dr. A.M. Forid Uddin Ahmed		Surgery
315	Dr. A.B.M. Mahbubur Rahman	Bangladesh Medical College, Dhanmondi	Surgery
340	Dr. Tanvir Ahmed	Dhaka Medical College, Dhaka	Surgery
381	Dr. Major Md. Ferdousur Rahman Sarker	Rajshahi Medical College, Rajshahi	Paediatrcs

Roll No.	Name of Candidate	From where Graduated	Speciality
382	Dr. Mohammad Abdul Hai Mia	Sir Salimullah Medical College, Dhaka	Paediatrcs
402	Dr. Olia Sharmeen Baten	Sir Salimullah Medical College, Dhaka	Paediatrcs
413	Dr. Md. Mostafizur Rahman	Rajshahi Medical College, Rajshahi	Paediatrcs
430	Dr. Atanu Kumar Basak	Rangpur Medical College, Rangpur	Paediatrcs
431	Dr. Salina Haque	Mymensingh Medical College, Mymensingh	Paediatrcs
433	Dr. Md. Abu Bakar Siddique	Dhaka Medical College, Dhaka	Paediatrcs
437	Dr. Chandan Kumar Shaha	Dhaka Medical College, Dhaka	Paediatrcs
699	Dr. Lutfun Nahar Begum	Chittagong Medical College, Chittagong	Neonatology
444	Dr. Most. Jinat Rehena	MAG Osmani Medical College, Sylhet	Obst.and Gynae
445	Dr. Shah Fahmida Siddiqua	MAG Osmani Medical College, Sylhet	Obst.and Gynae
455	Dr. Nasrin Rosy	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
462	Dr. Shikha Ganguly	Dhaka Medical College, Dhaka	Obst.and Gynae
465	Dr. Taslima Begum	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
466	Dr. Munawar Sultana	Mag Osmani Medical College, Sylhet	Obst.and Gynae
467	Dr. Mst. Tajmira Sultana	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
483	Dr. Rifat Ara	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
484	Dr. Nazma Siddiquee	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
485	Dr. Rokhshana Khatun	Rajshahi Medical College, Rajshahi	Obst.and Gynae
486	Dr. Marufa Sultana	Dhaka Medical College, Dhaka	Obst.and Gynae
497	Dr. Wahida Rahman	Rajshahi Medical College, Rajshahi	Obst.and Gynae
510	Dr. Nazma Khalil	Z.H. Sikder Women's Medical College,	Obst.and Gynae
511	Dr. Kamrun Nessa	Jahurul Islam Medical College, Kishoreganj	Obst.and Gynae
519	Dr. Selina Afroz Ansary	Dhaka Medical College, Dhaka	Obst.and Gynae
521	Dr. Shahina Akhter	MAG Osmani Medical Collage, Sylhet	Obst.and Gynae
522	Dr. Mahnaz Nushaffarin Akunjee	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
523	Dr. Nigar Sultana	Rangpur Medical College, Rangpur	Obst.and Gynae
526	Dr. Nusrat Ara Yousuf	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
527	Dr. Fowzia Yasmin	Mymensingh Medical College, Mymensing	Obst.and Gynae
533	Dr. Asim Kumar Saha	Dhaka Medical College, Dhaka	Obst.and Gynae
538	Dr. Sankar Prosad Biswas	Sher-e-Bangla Medical College, Barisal	Obst.and Gynae
540	Dr. Shuvra Mohajan	Chittagong Medical College, Chittagong	Obst.and Gynae
541	Dr. F.M. Anamul Haque	Dhaka Medical College, Dhaka	Obst.and Gynae
546	Dr. Israt Jahan	Mymensingh Medical College, Mymensing	Obst.and Gynae
561	Dr. Nasrin Ara Zaman	Sher-e-Bangla Medical College, Barisal	Obst.and Gynae
569	Dr. Husnatul Ferdous	Sir Salimullah Medical College, Dhaka	Obst.and Gynae
573	Dr. Shahina Akhter	Chittagong Medical College, Chittagong	Obst.and Gynae
579	Dr. Nusrat Rahman	Bangladesh Medical College, Dhanmondi	Obst.and Gynae
581	Dr. Zinia Sultana	Rajshahi Medical College, Rajshahi	Obst.and Gynae
618	Dr. Kanu Lal Saha	Dhaka Medical College, Dhaka	Otolaryngology
620	Dr. Md. Sahbub Alam	Sir Salimullah Medical College, Dhaka	Otolaryngology
630	Dr. Mohammad Jamal Hussain	MAG Osmani Medical Collage, Sylhet	Otolaryngology
631	Dr. Dipankar Lodh	Dhaka Medical College, Dhaka	Otolaryngology
640	Dr. Mohammed Shahjahan Kabir	Dhaka Medical College, Dhaka	Otolaryngology
641	Dr. A.H.M. Zahurul Huq	Sher-e-Bangla Medical College, Barisal	Otolaryngology
644	Dr. H.S. Mubarak Hossain	Chittagong Medical College, Chittagong	Otolaryngology

Roll No.	Name of Candidate	From where Graduated	Speciality
582	Dr. Qazi Md. Iqbal Hussain	Sir Salimullah Medical College, Dhaka	Opthalmology
584	Dr.(Major) Md. Abdur Rouf Siddique	Mymensingh Medical College, Mymensingh	Opthalmology
585	Dr. Zakia Wadud	Dhaka Medical College, Dhaka	Opthalmology
586	Dr. Mostafa Zahir Raihani	Sher-e-Bangla Medical College, Barisal	Opthalmology
588	Dr. Jahir Uddin Mahmud	Chittagong Medical College, Chittagong	Opthalmology
590	Dr. Mohammad Shish Rahman	Dhaka Medical College, Dhaka	Opthalmology
592	Dr. Subrata Kumar Biswas	Rajshahi Medical College, Rajshahi	Opthalmology
593	Dr. Md. Akkas Ali	Mymensingh Medical College, Mymensingh	Opthalmology
594	Dr. Md. Reazuddin	Rangpur Medical College, Rangpur	Opthalmology
595	Dr. Farhat Jahan	MAG Osmani Medical College, Sylhet	Opthalmology
596	Dr. Md. Mohshiur Rahman Chowdhury	Dhaka Medical College, Dhaka	Opthalmology
598	Dr. Sadia Sultana	Dhaka Medical College, Dhaka	Opthalmology
602	Dr. Salma Parvin	Sir Salimullah Medical College, Dhaka	Opthalmology
603	Md. Maftahul Hossain Chowdhury	Sir Salimullah Medical College, Dhaka	Opthalmology
606	Dr. Nazmun Nahar	Sher-e-Bangla Medical College, Barisal	Opthalmology
607	Dr. Mukti Rani Mitra	Dhaka Medical College, Dhaka	Opthalmology
608	Dr. Shams Mohammad Noman	Dhaka Medical College, Dhaka	Opthalmology
612	Dr. Md. Iqbal Hossain	Chittagong Medical College, Chittagong	Opthalmology
613	Dr. Mutushi Islam	Chittagong Medical College, Chittagong	Opthalmology
661	Dr. Mohammad Ali	Rajshahi Medical College, Rajshahi	Psychiatry
662	Dr. Md. Khairul Bashar	Dhaka Medical College, Dhaka	Psychiatry
646	Dr. Md. Refat Hossain Malik	Chittagong Medical College, Chittagong	Anaesthesiology
651	Dr. Md. Harun Or-Rashid	Rangpur Medical College, Rangpur	Anaesthesiology
652	Dr. Md. Enayet Karim	Sir Salimullah Medical College, Dhaka	Anaesthesiology
654	Dr. M. Masudul Haque	Mymensingh Medical College, Mymensingh	Anaesthesiology
658	Dr. Muhammad Delwar Hussain	Sher-e Bangla Medical College, Barisal	Anaesthesiology
660	Dr. Hasan Murshed	MAG Osmani Medical College, Sylhet	Anaesthesiology
668	Dr. Fatema Doza	Mymensingh Medical College, Sylhet	Radiology & Imaging
669	Dr. Banajaba	Mymensingh Medical College, Sylhet	Radiology & Imaging
671	Dr. Zafor Md. Masud	Bangladesh Medical College, Dhanmondi	Radiotherapy
676	Dr. Moyassaque Ahmed	Chittagong Medical College, Chittagong	Dermatology & Vener
682	Dr. Md. Shahadat Hossain		Dermatology & Vener
684	Dr. Shafique Ahammed Khan	Rajshahi Medical College, Rajshahi	Dermatology & Vener
693	Dr. Mohammad Khairuzzaman	Dhaka Dental College, Mirpur, Dhaka	Oral and Maxillofacial
694	Dr. Md. Mokerrom Hasan	Dhaka Dental College, Mirpur, Dhaka	Oral and Maxillofacial
692	Dr. Sufia Nasrin Rita	Chittagong Medical College, Chittagong	Orthodontics & Dento
697	Dr. Md. Rafiquzzaman Khan	Rajshahi Medical College, Rajshahi	Haematology
696	Dr. Nasreen Chowdhury	Chittagong Medical College, Chittagong	Biochemistry

182 candidates appeared in MCPS Examinations in different subjects. List of candidates who satisfied the board of examiners is as follows:

Roll No.	Name of Candidate	From where Graduated	Speciality
14	Dr. Kazal Kanti Dan	Rajshahi Medical College, Rajshahi	Medicine
49	Dr. Md. Musa Hawlader	Rangpur Medical College, Rangpur	Surgery
59	Dr. S.M. Shahadat Hossain	Sir Salimullah Medical College, Dhaka	Surgery

Roll No.	Name of Candidate	From where Graduated	Speciality
75	Dr. Kazi Nazma Begum	MAG Osmani Medical College, Sylhet	Obst. and Gynae
78	Dr. Selina Akter	Dhaka Medical College, Dhaka	Obst. and Gynae
79	Dr. Md. Nazmul Hoq	Sher-e Bangla Medical College, Barisal	Obst. and Gynae
80	Dr. Tanzina Sultana	MAG Osmani Medical College, Sylhet	Obst. and Gynae
82	Dr. Fathema Khan	Rangpur Medical College, Rangpur	Obst. and Gynae
85	Dr. Mahbubur Rahman	Sher-e Bangla Medical College, Barisal	Obst. and Gynae
91	Dr. Salma Lovereen	Sher-e Bangla Medical College, Barisal	Obst. and Gynae
92	Dr. Shamim Ara Hoque	USTC , Chittagong	Obst. and Gynae
93	Dr. Rowshan Ara Begum	Chittagong Medical College, Chittagong	Obst. and Gynae
96	Dr. Shantana Rani Paul	Mymensingh Medical College, Mymensingh	Obst. and Gynae
104	Dr. Ela Bati Mondol	Sher-e Bangla Medical College, Barisal	Obst. and Gynae
105	Shaharia Shaila Jahan	Sir Salimullah Medical College, Dhaka	Obst. and Gynae
112	Dr. Tahera Yasmin	Rangpur Medical College, Rangpur	Obst. and Gynae
113	Dr. Ferdousi Sultana	Mymensingh Medical College, Mymensingh	Obst. and Gynae
115	Dr. Munira Yeasmin	Dhaka Medical College, Dhaka	Obst. and Gynae
118	Dr. Md. Basirul Azam	Mymensingh Medical College, Mymensingh	Opthalmology
126	Dr. Md. Monsur Alam	Comilla Medical College, Comilla	Otolaryngology
128	Dr.(Capt) Salah Uddin Ahmmed	Sir Salimullah Medical College, Dhaka	Otolaryngology
129	Dr. Mahmmad Shamsul Alam	Rajshahi Medical College, Rajshahi	Psychiatry
130	Dr. Muhammad Shamsul Alam	Rajshahi Medical College, Rajshahi	Psychiatry
131	Dr. Bulbul Ahmed Khan	Jahurul Islam Medical College, Kishoreganj	Psychiatry
135	Dr. Sharif Mohammad Abdullah	Moulana Bhasani Medical College, Dhaka	Anaesthesiology
137	Dr. Md. Ghulam Azam	Sir Salimullah Medical College, Dhaka	Anaesthesiology
141	Dr. Md. Kamrul Hasan	Dhaka Medical College, Dhaka	Anaesthesiology
155	Dr. Syed Atiqur Rahman	Rajshahi Medical College, Rajshahi	Dental Surgery
157	Dr. Ayesha Siddika	Pioneer Dental College, Dhaka	Dental Surgery
168	Dr. Suvash Chandra Roy	Sher-e Bangla Medical College, Barisal	Family Medicine
174	Dr. Ashutosh Singha	Sher-e Bangla Medical College, Barisal	Family Medicine
175	Dr. Sarder Md. Abu Horaira	Rajshahi Medical College, Rajshahi	Clinical Pathology
177	Dr. Lutfunnahar Khan	Dhaka Medical College, Dhaka	Clinical Pathology
180	Dr. Forhad Monjur	USTC, Chittagong	Clinical Pathology
181	Dr. Md. Jashim Uddin	Sher-e Bangla Medical College, Barisal	Clinical Pathology

33 candidates appeared in Preliminary FCPS- II Examinations in different subjects. List of candidates who satisfied the board of examiners is as follows:

Roll No.	Name of Candidate	From where Graduated	Speciality
12	Dr. Sayed Imran Hossain		Preli- Surgery
29	Dr. Shimu Paul		Preli- Surgery

Election of the Councillors and Executive Committee:
The Election of 8 Councillors of the College was held on 23-02-2007

Members of the Council of the BCPS (2007-2009)

1. Prof. Md. Abdul Mobin Khan
2. Prof. Quazi Deen Mohammad
3. Prof. M.A. Majid
4. Prof. Md. Abul Kashem Khandaker
5. Prof. M.A. Hadi
6. Prof. AHM Towhidul Anowar Chowdhury
7. Prof. T.I.M. Abdullah-Al-Faruq
8. Prof. Mohammad Saiful Islam
9. Prof. Nazmun Nahar
10. Prof. Md. Sanawar Hossain
11. Prof. Abdul Kader Khan
12. Prof. Mahmud Hasan
13. Prof. Choudhury Ali Kawser
14. Prof. Md. Ruhul Amin
15. Prof. S.A.M. Golam Kibria
16. Prof. Sayeba Akther
17. Prof. M. A. Majed
18. Prof. Tofayel Ahmed
19. Prof. A.H.M. Ahsanullah
20. Prof. A.N.M. Atai Rabbi

Executive Committee:

President	: Professor Mobin Khan
Senior Vice- President	: Professor Quazi Deen Mohammad
Vice-President	: Professor M.A. Majid
Treasurer	: Professor Md. Abul Kashem Khandaker
Member	: Professor M.A. Hadi
	Professor A.H.M. Towhidul Anowar Chowdhury
Honorary Secretary	: Professor T.I.M. Abdullah-Al-Faruq

Examination Committee:

Professor Quazi Deen Mohammad	Chairperson
Professor Md. Tahir	Member
Professor Md. Humayun Kabir	"
Professor M.A. Hadi	"
Professor A.H.M. Towhidul Anowar Chowdhury	"
Professor S. A. M.Golam Kibria	"
Professor Sayeba Akhter	"
Professor Choudhury Ali Kawser	"
Major General (Dr.) Md. Ali Akbar	"
Professor Mohammad Saiful Islam	"
Professor Md. Abdullah	"
Professor Syed Mukarram Ali	"

Reference Committee:

Professor Md. Abdul Mobin Khan	Chairperson
Professor Nazmun Nahar	Member
Professor Md. Sanawar Hossain	"
Professor Abdul Kader Khan	"
Professor Tofayel Ahmed	"
Professor A.N.M. Atai Rabbi	"
Dr. (Maj.Gen.) Md. Abdul Moyeed Siddiqui	"
Professor Kohinoor Begum	"
Professor Abu Zafar Md. Zahid Hossain	"
Professor A.Z.M. Maidul Islam	"
Professor T.I.M. Abdullah-Al-Faruq	"

Finance & Tender Committee:

Professor M.A. Majid	Chairperson
Professor Mahmud Hasan	Member
Professor Md. Ruhul Amin	"
Professor Kaniz Moula	"
Professor Projesh Kumar Roy	"
Professor Md. Margub Hossain	"
Professor A.N.M. Zia-ur-Rahman	"
Professor Md. Abul Kashem Khandaker	"
Professor Ava Hossain	"
Dr. (Maj. Gen.) Md. Ali Akbar	"
Professor Mohammad Hanif	"
Professor Firoza Begum	"
Professor Syed Atiqul Haque	"
Professor Parveen Shahida Akhter	"
Professor Md. Abdul Quadir	"
Professor Md. Rafiqul Alam	"
Dr. Md. Taslim Uddin	"
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Professor Firoza Begum	"
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Faculty of Basic Medical Sciences:

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Professor Kh. Manzare Shamim	"
Professor Nadira Islam	"
Professor Nilufar Sultana	"
Professor Shamim Ara	"
Professor Kh. Md. Shefyetullah	"
Professor Mezbun Ara Begum	"
Professor Zinnat Ara Begum	"
Professor Nilufar Begum	"
Professor Humaira Naushaba	"
Professor Faruk Ahmed	"
Professor Selina Ahmed	"
Dr. Md. Mizanul Haque	"
Dr. (Brig. Gen.) Shazadi Nilufar	"
Dr. (Col.) Zahid Mahmud	"
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Professor Md. Abdul Mannan Miah	"
Professor Md. Moazzam Hossain	"
Professor Md. Monimul Haque	"
Professor Kishwar Azad	"
Professor Md. Sirajul Islam	"
Professor Hosne Ara Begum	"
Professor Md. Abdul Halim	"
Professor Choudhury Ali Kawser	"
Professor A. F.M. Salim	"
Professor Md. Badrul Alam	"
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Professor Khan Nizamuddin	"
Professor Md. Nurul Absar	"
Professor Mohammad Hanif	"
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Professor Afiqul Islam	"
Professor Md. Ekhlasur Rahman	"
Prof. S.M. Shahnawaz Bin Tabib	"
Professor A.R.M. Luthful Kabir	"
Professor Ainun Afroze	"
Professor Choudhury Habibur Rasul	"
Professor Syed Zahid Hossain	"
Professor Soofia Khatoon	"

Professor Abdul Hannan	"
Professor Mohammad Shahidullah	"
Professor Md. Ruhul Amin	"
Professor Saeedur Rahman	"
Professor Shahana Akhter Rahman	"
Professor Md. Nazrul Islam	"
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Professor T.I.M. Abdullah-Al-Faruq	"
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Professor Mirza Mazharul Islam	"
Professor Abdul Bayes Bhuiyan	"
Professor A.H.M. Ahsanullah	"
Professor Shamsuddin Ahmed	"
Professor A.N.M. Atai Rabbi	"
Professor M.A. Hadi	"
Professor Mahmud Hasan	"
Professor Tofayel Ahmed	"
Professor Nazmun Nahar	"
Professor Md. Sanawar Hossain	"
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Professor Sayeba Akhter	"
Professor Choudhury Ali Kawser	"
Professor Md. Ruhul Amin	"
Professor Abdul Kader Khan	"
Professor Md. Zafor Ullah Chowdhury	"
Dr. Nooruddin Ahmed	Member Secretary

Continuing Professionals Development Lectures

Date	Time	Topic	Speaker	Chairperson
17-04-2007 Tuesday	11-00am to 11-50am	"Subclinical thyroid disorder"	Dr. Satya Ranjan Sulradhar Asst. Prof. MedicineMymensingh Medical College	Prof. Zafar A Latif (Medicine)
	12-10 pm to 1-00 pm	" Is low level of serum ionized magnesium responsible for eclamsia"	Dr. Rabeya AktherFCPS (Obst. & Gynae) Senior Medical fficer Bangladesh Bank Medical Center Motijheel, Dhaka.	Prof. Latifa Samsuddin (Obst. Gynae)
08-05-2007 Tuesday	11-00am to 11-50am	Presentation & Management of Posterior urethral valve in children.	Dr. Shah Md. Ahsan Shahid Office: Room No. H/2, Doctors Hostel Dhaka Shishu Hospital, Dhaka-1000.	Prof. Sofiqul Haque (Surgery)
	12-10 pm to 1-00 pm	An overview on ImplantableCardioverter Defibrillator (ICD)	Dr. Abdullah Al jamil, MBBS,FCPS, MDInterventional Cardiologist & Electro Physiologist Associate Consultant-Cardiology Square Hospital Ltd. Dhaka-1205.	Prof. KMHS Sirajul Hoque (Medicine)
22-05-2005 Tuesday	11-00am to 11-50am	Safe Surgery & Safe Surgeon	Dr. Jitesh Chandra SahaFCPS (Surgery) FRCS (Edin) Asst. Prof. of surgery Faridpur Medical College Hospital	Prof. Md. Khademul Islam(Surgery)
	12-10 pm to 1-00 pm	Management update on Lymphoma based on recentclassification.	Dr. Manzur Morshed Prof. of Clinical Hematology BSMMU, Dhaka.	Prof. Mohiuddin Ahmed Khan (Haematology)
29-05-2007 Tuesday	11-00am to 11-50am	Surgical Treatment of oral cancer (wide Excision & Neck Dissection) and Reconstruction with pedicle & Micro vascular.	Dr. S.M.Anwar Sadat BDS.BCS. MCPS.FCPS (Oral. &Maxilloficial Surgery) Fellow No-1793 Dept. of oral & Maxillofacial Surgery Dhaka Dental College & Hospital (Old Campus)	Prof. Motiur RahmanMolla (Dentristy)
05-06-2007 Tuesday	11-00am to 11-50am	Prevention of urinary tract injury during hysterectomy.	Dr. Dipti Pramanik FCPS (Gynae & Obst.) Faridpur Medical College Hospital	Prof. A.K.M Anowarul Islam Urology)
	12-10 pm to 1-00 pm	Management of diabetic foot-An update.	Dr. Dewan Ali Hassan Chowdhury FCPS(Surgery) FRCS (Edin) Asst. Prof. of Surgery Sylhet MAG osmani Medical College.	Prof. Humayun Kabir Chowdhury (Surgery)