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e. Results (Tables with titles and Figures with legends)
f. Discussion
g. Conclusion
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• Present results in a logical sequence in text, table and illustration with most important finding first
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Editorial

Historical Perspective of Diarrheal Illness

*Rizwan ASM[1], Akhter S[2]

Before the inception of the antibiotic era, infectious disease was the number one killer of mankind. Although non communicable disease has gained the top spot ever since, millions of people have succumbed to their death by acute diarrhoeal illness till date. The horrific tale of cholera pandemic may have gone down the memory lane but the wave of diarrhoeal disaster is still something to be battled every year, even in this age of medical marvel. In the continuum of diarrhoeal disease saga, if someone tries to pick any single event that had the most impact, it must point towards the invention and implementation of oral rehydration solution. The tiny little pack of salt that we are so familiar with now and perhaps take it as granted was not always around the corner. The horror of diarrhoea realted death toll was finally manageable by the introduction of this seemingly simple yet elegant scientific discovery.

If we look into the history leading to the advent of modern treatment of diarrhea, we will notice that, for centuries human had no clue regarding the cause of diahhroea. So, like any other illness, people tend to attach meaning to meaningless phenomena. For example, parents started to see a pattern of diarrhoea with weaning of babies or during teeth eruption. So, they thought those were the factors behind the disease. Another prevailing hypothesis was diarrhoea is a weather related disease. This can be epitomised by the naming 'summer diarrhea' and 'winter vomiting disease' which were believed to be brought on by hot & cold weather respectively.[1,2] It was not until the 16th Century that we could shift our focus from these theories to diet. A century later the concept of flies contaminating food started to gain root. In the 19th century scientists started to wonder about the role of organisms behind diarrheal illness. Soon, one after another reports of discoveries of different microbes in diarrhea patients started to pour in and the infectious nature of the disease was established.

War and diarrhea!

The history of mankind is pretty much intertwined with warfare. Historically speaking, Diarrhea was proved to be one of the decisive factors in many wars. To put things into perspective, during the infamous war led by Napoleon, more people had died from diarrhea than the military campaign! Same is true for many more battles like the Crimian war.[3] Things were so out of hand that, during the US Civil war, a slogan emerged that said "No Gut, No Glory" depicting the value of a healthy gut to become an effective military personnel. They even had a code of not shooting a man attending the loo![4] Father of modern Medicine William Osler had righly said 'Dysentry has been more fatal to armies than powder and shot'.[5]

Earlier management

Diarrhea was seen as a protective response of the body against the obnoxious substances and cleansing the gut was considered the core management. To purge the gut, several objects like aromatic chalk powder, bismuth, castor oil etc. were commonly used.[6] Moreover; patients were encouraged to drink plenty of plain water to replenish the lost volume. Use of opium was also commonplace but was later on out of favour because of its addictive nature.

Discovering oral rehydration solution (ORS)

At the core of mistreatment of diarroeal illness was our lack of understanding of electrolyte loss. In 1940 Dr. Daniel Darrow of Yale university first

drew the attention of the scientific community regarding the importance of electrolyte in diarrhea in light of his seminal research and started advocating replacement fluid containing sodium, potassium and glucose.[7] In 1962, a United States Army Captain Phillips first applied glucose-salt solution to cholera patients amidst an outbreak in Philipines and was astonished to find out the efficacy.[8] Inspired by his result, scientists of Cholera Research Laboratory, Dhaka, and the Infectious Diseases Hospital, Calcutta, had further refined the process. Indian scientist Dr. Dilip Mahalanabis had used ORS in cholera cases among Bangladeshi refugees during 1971 liberation war and the result was very promising. Finally, after all these convincing scientific evidences supporting the efficacy of ORS, World Health Organization launched the global diarrheal diseases control program in 1978 where ORS was the key component. Since then, childhood mortality from diarrhoral disease has drastically fallen from 5 million to 1.3 million deaths annually. In Bangladesh, the renouned non Government organizatiion BRAC collaborated with ICDDRB to train rural mothers on how to make ORT using household component. They have trained an estimated 12 million mothers since 1980 that had helped to cut down childhood mortality tremendously.

Newer formulation

The initially formulated World Health Organization oral rehydration solution (WHO-ORS) was launched for cholera treatment, and later on proved to be effective irrespective of cause of diarrhea or age of the patient.[9] However, that formulation is not capable of significantly decreasing either stool volume or the duration of diarrhea episodes.[10] So, WHO kept working on finding out an improved ORS for enhancing treatment. Finally, after conducting many trials with different patient population and vatied concentration, WHO came up with the modified "Reduced Osmolarity" ORS formulation that was proven to reduce stool output, episodes of vomiting and the need for intravenous hydration. Moreover, the need for unscheduled intravenous therapy in children was also dropped by 33%.

Conclusion

Diarrhea is one of the deadliest diseases worldwide, specially for under five years children. ORS is credited to have saved an estimated 50 million lives since its discovery. In 1978 the highly prestigious medical journal "Lancet" had opined that, ORS is potentially the most important medical advance of the 20th century! One of the greatest benificiary of this mervalous mix of fluid is Bangladesh. We should aim to prevent dirrahoea related death by promoting widespread awareness of its viciousness and its relatively simple remedy.

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Original Article

Child Delivery Practice among the Rural Mothers in Bangladesh

***Islam S[1], Suchi SE[2], Rahman ASMA[3], Hassan MA[4], Saha S[5]**

Abstract

Background: *Childbirth is a significant event in a woman's life, and the place of delivery plays a crucial role in determining maternal and neonatal health outcomes. In Bangladesh, where a substantial portion of the population resides in rural areas, understanding the dynamics of child delivery locations is paramount for improving maternal and child health.* ***Objectives:*** *The study conducted among the rural mothers with a view to find out the place of child delivery among the rural mothers and their associated factors.* ***Materials & Methods:*** *Total 420 rural mothers were interviewed through face to face interview session with a structured questionnaire. The questionnaire was prepared keeping in view with the objectives, hypothesis and variables considered in the study.* ***Results:*** *Among 420 married women having at least one child; 323(76.7%) preferred home delivery, citing factors such as good health service (16.72%), poor health service (3.72%), low socio-economic condition (4.34%), family choice (9.28%), and the absence of complications (65.94%). Conversely, 97(23.3%) opted for hospital delivery, with reasons including pre-mature rupture of membranes (25.8%), postdated pregnancies (16.5%), abnormal positions of the baby (10.3%), self-consciousness (37.1%), and high-risk mothers (10.3%).* ***Conclusion:*** *The study highlights the complex interplay of cultural, economic, and infrastructural factors influencing maternal healthcare choices. Efforts to improve maternal and child health outcomes must be tailored to address these challenges. By combining targeted interventions, community engagement, and policy initiatives, there is a significant opportunity to enhance the well-being of mothers and newborns in rural Bangladesh, ensuring safer childbirth experiences and healthier futures.*

Keywords: Child delivery practice, Rural mothers, Bangladesh.

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Introduction

Globally, 1500 women die every day because of complications in pregnancy and childbirth, the burden is highest in Africa, followed by the South Asian region. The disparity between maternal mortality in low and high income countries is striking, almost all (90%) maternal deaths occur in low income countries.[1] In Bangladesh, maternal mortality is progressively reducing from 320 to 194 per 100000 live births during the last decade. The country has been putting tremendous effort to achieve millennium developmental goals (MDGs) in time.[2] Globally many strategies have been implemented preventing the overwhelming majority of maternal mortality from direct maternal causes.[3] Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth and 99% of all maternal deaths occur in developing countries. Maternal mortality is higher in women living in rural areas and among poorer communities.[4] Some factors that might affect women's health care seeking behaviors for safe motherhood in rural areas of Bangladesh are age at marriage, age at childbirth, education level, work status, economic status, location of the residence, and husband's awareness and so on. Another serious problem in this regard is that there are many non-qualified health care providers in Bangladesh.[5] Traditionally, children in Bangladesh are delivered at home with the assistance of birth attendants or elderly women of the community (BDHS, 2009).[6] Most deliveries at home in slum areas are conducted by women with some practical experience but with little formal training.[7] Lack of knowledge about antenatal care (ANC) and place of delivery is responsible for such a situation.[8] Women are most in need of skilled

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care during delivery and immediate post-partum period, when roughly seventy five percent of all maternal death occurs.[9] Appropriate delivery care is crucial for both maternal and perinatal health, and increasing skilled attendance at birth is a central goal of the safe motherhood and child survival movements. In addition, it is important that mothers should deliver in an appropriate setting where lifesaving equipment and hygienic conditions are available and can help reduce the risk of complications that may cause death or illness to the mother and the child.[10] Social and cultural beliefs and practices regarding pregnancy and childbirth have a significant influence on maternal health. For example, in the context of Bangladesh, pregnancy is considered as a normal event unless complications arise and care during pregnancy and childbirth is offered by female members of the household.[11] and several studies have identified a variety of cultural norms and superstitions that still exist in Bangladesh and are harmful for achieving healthy and safe motherhood.[12]

Materials and Methods

This study was a cross-sectional descriptive study and was conducted in the department of Community Medicine of Ad-din Sakina Women's Medical College in the month of January 2017 at Ghoragacha, Rupdia, Jashore using random sampling method from 420 married women having at least one child, aged between 15-55 years. Data were collected by 3rd year female medical students through face-to-face interviews using semi-structure questionnaire. The interviewers were trained by the investigators on interview skills, research ethics and about the objectives of the study. All interviews were conducted with adequate privacy. Data were analyzed using IBM SPSS statistics 25. All participants provided written informed consent before participating in the interview.

Results

The mean age of the respondents were 34 years ranging from 15 to 55 years.

Table I : Age distribution of the respondents (n=420)

Age of Respondents	No of Respondents	Percentage (%)
15-20	10	4.3
20-25	75	16.3
25-30	85	21.5
30-35	77	17.4
35-40	65	17.4
40-45	59	12
45-50	37	8.8
50-55	12	2.3

One fifth (21.5%), that is 85 were in the range of 25 to 30 years. 65 that is 17.4% were in the range of 35 to 40 years. 37 that is 8.8% were in the range of 45 to 50 years & the lowest number of 10 (4.3%) in the range of 15 to 20 years (Table I). Among the respondents, 407 (96.9%) were housewife, 7 (1.7%) were involved in some kind of service & only 6 (1.4%) were laborer. Their average monthly income was 24986 taka. The mean age of respondents at 1st child birth was 18 and having average 2 children and maximum family members was 3-6 (87.3%) and belonging from 362 (88.3%) to Muslim community & 58 (11.7%) belong to Sanatan community.

Table II: Family head of Respondents

Family head	No of Respondents	Percentage (%)
Husband	376	89.8
Father	13	3.3
Mother	3	0.2
Son	28	6.7

The family head (Table II) distribution among respondents indicates that the majority 376 (89.8%) are headed by husbands, followed by sons 28(6.7%), fathers 13 (3.3%), and a small percentage headed by mothers 3 (0.2%).

Table III: Educational status of Respondents

Educational status	No of Respondents	Percentage (%)
Illiterate	109	25.5
Class V	156	37.4
Class X	76	19.5
SSC	44	9.0
HSC	21	5.2
Graduate	14	3.3

The educational status of respondents shows a diverse distribution (Table III), with 156 (37.4%) have completed Class V, 76 (19.5%) reaching Class X, and smaller percentages for higher education levels, including 44 (9.0%) with SSC, 21 (5.2%) with HSC, and 14 (3.3%) as graduates, while 109 (25.5%) are illiterate.

Table IV: 1st Child delivery Place of the respondents (n=420)

Place of Delivery	No of Respondents	Percentage (%)
Home	323	76.7
Hospital	97	23.3

The majority of respondents 323 (76.7%) delivered their first child at home (Table IV); while a smaller percentage 97 (23.3%) opted for a hospital delivery.

The reasons or factors associated with home delivery 323 (76.7%); among the respondent (Table V) 54 (16.72%) respondents mentioned good health service as a factor, 12 (3.72%) cited poor health service, 14 (4.34%) mentioned low socio-economic condition, 30 (9.28%) mentioned family choice, and the majority, 213 (65.94%) respondents, mentioned no complications as a reason for choosing home delivery.

Table V: Associated factors for Home Delivery. (n=323)

Reasons of Delivery	No of Respondents	Percentage (%)
Good health service	54	16.72
Poor health service	12	3.72
Low socio-economic condition	14	4.34
Family choice	30	9.28
No complication	213	65.94

Table VI: Reasons of Hospital Delivery (n=97)

Reasons of Delivery	No of Respondents	Percentage (%)
Pre mature rupture of membrane	20	25.8
Postdated pregnancy	16	16.5
Abnormal position of baby	10	10.3
Self-consciousness	36	37.1
High risk mother	10	10.3

Hospital deliveries (n=97) were primarily influenced by reasons (Table VI) such as premature rupture of membrane (25 respondents, 25.8%), postdated pregnancy (16 respondents, 16.5%), abnormal position of the baby (10 respondents, 10.3%), self-consciousness (36 respondents, 37.1%), and high-risk mother (10 respondents, 10.3%).

Discussion

The study conducted in Ghoragacha, Rupdia, Jashore aimed to investigate the place of child delivery among rural mothers. The findings revealed that the mean age of respondents was 34 years, ranging from 15 to 55 years. Notably, 76.7% of respondents delivered their child at home, primarily driven by family choice, good health service, poor transport facilities, and low socioeconomic conditions. Similar study Fronczak et.al (2007)[7] (82%) and Begum et al (2013)[9] (82.5%) found most of the deliveries took place at home. In terms of education, a significant portion of respondents had limited education, with 37.4% studied up to class five, 25.5% being illiterate, and only 3.3% being graduates and similar to the study conducted by Kamal(2013).[10] The majority of respondents belonged to the Muslim community (88.3%), and belonging from low and middle income family. The reasons for home delivery included family choice (7%), no complications (52.6%), good health service (12.9%), poor health service (2.9%), and low socioeconomic conditions (3.3%). Conversely, hospital deliveries (23.3%) were attributed to factors such as postdated pregnancy, self-consciousness, premature rupture of membranes, abnormal baby position, and high-risk mothers. In a similar study conducted by Begum M et al (2013),[9] among the rural women of Bangladesh shows majority of the respondents (71.2%) felt that home delivery was comfortable and 10.1% were compelled to deliver at home due to family decision, financial constraint (4.7%), and other causes. The discussion highlighted the challenges faced by rural mothers in accessing hospital facilities for childbirth, emphasizing the impact of family and social barriers on proper birth planning and maternal healthcare seeking behavior. The study underscored the prevalence of home deliveries and associated risks, including unhygienic practices and the absence of medical knowledge and facilities. The discussion also addressed the global context, citing statistics on maternal mortality and emphasizing the importance of safe motherhood for a country's overall development.

Conclusion

The places of child delivery among the rural mothers of Bangladesh are in home rather than hospital. There are various determinants for the place of the child birth among rural mothers of Bangladesh and these identified factors can inform policy makers and program implementers to adopt socially and culturally appropriate interventions that can improve delivery seeking behavior and thus contribute to the reduction of maternal and neonatal mortality and morbidity in rural Bangladesh.

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Original Article

Prevalence of Prediabetes and Associated Risk Factors among Undergraduate Medical Students

***Khatun M[1], Bakar MA[2], Rownak N[3], Ahmed F[4], Abedin J[5] ,Khanam S[6]**

Abstract

Background: *Diabetes is a silent killer, which can take the lives of victims if undiagnosed at the earliest stage. Prediabetes is the preventable and curable stage of diabetes mellitus. The objectives of our study were to determine the prevalence of prediabetes and find out any association between the different risk factors with prediabetes among undergraduate medical students.* ***Materials and methods:*** *This cross sectional study was conducted in Chattagram Maa-O-Shishu Hospital Medical College from September 2019 to February 2020. A total 100 medical students of both sex, age ranges from 19 to 25 years participated voluntarily. Socio demographic profile, associated risk factors and biochemical parameters were recorded in the questionnaire to determine the prediabetic group of study. SPSS 22 version was used for data analysis.* ***Results:*** *In this study 35% student had raised their blood glucose level and recognized as prediabetes. 74% students reported a family history of diabetes with their parents or grandparents, 23% of students maintaining their sedentary lifestyle, 44% students were overweight or obese having central obesity and 41% smoke active or passively. Alarmingly our 96% students were in stress and 69% complained about their sleep disturbance. We found significant ($p<0.05$) influence of family history of diabetes, regular physical activities and sleep disturbance over prevalence of prediabetes. There was strong association between prediabetes and sleep disturbance (OR 1.84; $p<0.05$).* ***Conclusion:*** *From this study it may be concluded that prediabetes screening for medical students gives the opportunity to implement lifestyle interventions as early as possible, which could prevent the development of diabetes in future leading generation.*

Keywords: Prediabetes, Risk factors, Medical students

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Introduction

Diabetes is one of the most challenging health problems of the twenty-first century. It is one of the major causes of morbidity and early mortality worldwide.[1] It has become the seventh leading risk factor for burden of disease in South Asian countries.[2] Bangladesh has the second largest number of adults with diabetes (5.1 million adults, 6.31%).[3] Previously, diabetes was a middle-aged disease but currently it shifted to a much younger age.[4]

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The first stage is characterized by insulin resistance accompanied by a compensatory increase in insulin secretion; is called prediabetes. This stage is often referred to as the "grey area".[5] Patients with both impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) have insulin resistance, but the site of their predominant insulin resistance differs.[6,7] Prediabetes is defined as a fasting blood glucose concentration of 100-124 mg/dl, or a two-hours post prandial blood glucose concentration of 140-199 mg/dl or a HbA1c value of between 5.7% and 6.4%. So, prediabetes includes subjects with elevated fasting plasma glucose concentrations and normal response to a glucose load called IFG or subjects with raised postprandial blood glucose with normal fasting glucose concentration called IGT or a combination of both IFG and IGT.[8] The subjects with IFG have predominantly hepatic insulin resistance, whereas IGT have predominantly muscle insulin resistance.[9]

Prevalence of IGT is 8.3% globally[10], is associated with physical inactivity, obesity (especially central

obesity), dyslipidemia with high triglycerides and/or low high density lipoprotein cholesterol, and hypertension.[11] It is thus a metabolic syndrome, usually involves no symptoms and only high blood sugar as the sign.[12]

There is evidence that prediabetes is a curable disease state.[13] Intensive weight loss and lifestyle intervention may improve glucose tolerance substantially and prevent progression from IGT to type2 diabetes. Prevention or delay in the onset of diabetes should not only recover the burden of the disease on the individual, but could also decrease the associated morbidity and mortality. Preventing type 2 diabetes may result in significant public health benefits, including lower rates of cardiovascular disease (CVD), renal failure, blindness and premature mortality.[14] The prevalence of pre-diabetes notably increased with increasing age and increasing weight.[15] The earlier onset of the disease is important because of the effect on the productive life years and the long term burden on the healthcare.[16] Prevalence of active and passive smoking among medical students also increasing and the nicotine deteriorate glucose metabolism, glycemic control and ultimately insulin resistance that leads to prediabetes.[17]

A high prevalence of stress is reported among medical students globally. Extensive curricula, numerous academic requirements, frequent, difficult and various types of examinations make their life stressfull.[18] It is well documented that high levels of stress has negative effects on the physical and mental health of medical students.[19] They reduce their sleep time for academic requirements that is extra time for study and workload especially before an examination. Sleep disturbance or voluntarily restricted sleep duration are associated with impairment of glucose homeostasis, beta cell dysfunction and increased risk of diabetes.[20,21] Studies have shown that people who reported sleeping fewer than five hours per night had a greatly increased risk of developing diabetes.[22]

Medical students have a stressful life, sedentary lifestyle and irregular food habits which could predispose them for pre diabetes or diabetes at a younger age. They are important part of the society and can be easily educated regarding the early identification of pre diabetes to prevent the complications that follow in the later life.[23]

Our study participants will be the future healthcare professionals and will play crucial role in health promotion. So, study has been designed to observe the prevalence of prediabetes among the medical students and to investigate any association between the different risk factors with prediabetes prevalence.

Materials and Methods

This cross sectional study was conducted in the Physiology, Bio chemistry and Endocrinology department of Chattagram Maa-O-Shishu Hospital Medical College from September 2019 to February 2020 after receiving ethical approval from institutional Ethical Review Committee and research grant from Chittagong Medical University. A total 100 medical students of both male and female (first year to fifth year) age range from 19 to 25 years voluntarily participated and included in this study. The students having history of diabetes mellitus, asthma, heart disease, pancreatic disorder, any endocrine disorder, malignancy or habit of alcohol consumption were excluded from this study. All respondents were briefed about purpose of the study and painful procedure of sample collection.

Waist-hip circumference, weight, and height were measured. BMI of ≥25kg/m² considered as overweight and ≥30kg/m² as obese. The waist circumference (cutoff for Asians) of ≥90 cm for males and ≥80 cm for females marked as central obesity.
Their blood sample was collected after 8 hours of fasting at around 9.00 am for FBS with HbA1c and then two hours after taking 75gm glucose for 2HPPBS. The students having FBS ≥100-126 mg/dl

or 2HPPBS 140-199 mg/dl or a HbA1c 5.7% - 6.4% were diagnosed as prediabetes.

All the information regarding their identity, anthropometric measurements, associated risk factors and laboratory findings were recorded in pre-designed, validated questionnaire and statistical analysis was done by using SPSS 22 version. The frequency distribution, mean, standard deviation, and cross-tabulations were used in this descriptive analysis. Chi square analysis was performed to test the association between the prevalence and associated risk factors. The analysis was performed at a 95% confidence interval and P <0.05 was considered to be statistically significant. The risk factors were further analyzed by multiple logistic regressions.

Results

All the information of 100 medical students was collected for statistical analysis. The prevalence of prediabetes, baseline characteristics of study participants and association between risk factors and prediabetes are presented in following table

Table I shows 25% students had raised fasting blood sugar (FBS) >100 mg/dl, 16% had 2 hours post prandial blood sugar (2HPPBS) >140mg/dl and only 2% had HbA1c >5.7%. Among them 1% had raised all FBS, 2HPPBS and HbA1c. 6% had raised both FBS and 2HPPBS and 1% had raised FBS and HbA1c. A total 65 students had normal blood glucose level and 35 (23 female and 12 male) had raised blood glucose level and recognized as prediabetes.

Table II shows the baseline characteristics of the students, presenting frequency distributions of the participants as per their different risk factors.74% students reported a family history of diabetes with their parents or grandparents. 23% of students maintaining their sedentary lifestyle and 77% perform light or moderate exercise. 29% students were overweight, 15% were obese and majority of them (53%) having central obesity. 41% of our study participants smoke active or passively. Alarmingly our 96% students were in stress and 69% complained about their sleep disturbance.

Table: I : Prevalence of prediabetes among study participants (n = 100)

	Male	Female	Total (n = 100)	*p* value
Fasting blood glucose				
>100mg/dl	10%	15%	25%	
<100mg/dl	33%	42%	75%	0.456
2 hours post prandial blood glucose				
>140mg/dl	4%	12%	16%	
< 140mg/dl	39%	45%	84%	0.093
HbA1c				
>5.7%	1%	1%	2%	
<5.	42%	56%	98%	0.927
n = number of study sample, *p* value by using Chi square test.				

Table II: Baseline characteristics of study participants (n = 100)

Risk factors		Male	Female	Total (n=100)	*P* value
Family history of DM	Present	29%	45%	74%	0.017**
	Absent	14%	12%	26%	
Physical activity	Moderate	10%	4%	14%	0.91
	Light	26 %	37%	63%	
	Sedentary	7%	16%	23%	
BMI (kg/m²)	<25	14%	42%	56%	0.000***
	25-30	21%	8%	29%	
	>30	8%	7%	15%	
Waist circumference in cm	<80	2%	35%	37%	0.000***
	>80	10%	11%	21%	
	<90	0%	2%	2%	
	>90	31%	9%	40%	
Central obesity	Present	31%	22%	53%	0.000***
	Absent	12%	35%	47%	
H/O Smoking	Present	23%	18%	41%	0.000***
	Absent	20%	39%	59%	
Sleep disturbance	Present	23%	46%	69%	0.011**
	Absent	20%	11%	31%	
Stress	Present	39%	57%	96%	0.003**
	Absent	4%	0%	4%	

n = number of study sample. Significant * p <0.05, ** p <0.01, *** p<0.001

Table III shows the summary of the risk factors and prevalence of prediabetes in study participants. The prediabetes was cross tabulated with associated risk factors. The risk factors of family history of diabetes mellitus, regular physical activity and sleep disturbances were found to be significantly ($p<0.05$) influencing the prediabetes but BMI, central obesity stress, and smoking habit was not significant statistically ($p>0.05$).

Table IV Shows multiple logistic regressions for association of risk factors for prediabetes in study participants. We found significant association of sleep disturbance with prediabetes (OR 1.84; $p<0.050$).

Table III: Association between risk factors and prevalence (n =100)

Risk factors		Normal	Prediabetes	Total (n = 100)	*p* value
Gender	Male Female	31% 34%	12% 23%	43% 57%	0.140
Family history of DM	Present Absent	46% 19%	30% 5%	76% 24%	0.027*
Physical activity	Moderate Light Sedentary	11% 45% 9%	3% 18% 14%	14% 63% 23%	0.020*
BMI (kg/m^2)	< 25 25-30 >30	39% 18% 8%	17% 11% 7%	56% 29% 15%	0.464
Waist circumference in cm	<80 >80 <90 >90	26% 13% 1% 25%	11% 8% 1% 15%	37% 21% 2% 40%	0.838
Central obesity	Present Absent	39% 26%	24% 11%	63% 37%	0.838
H/O Smoking	Present Absent	27% 38%	14% 21%	41% 59%	0.524
Sleep disturbance	Present Absent	42% 23%	27% 8%	69% 31%	0.015
Stress	Present Absent	61% 4%	35% 0%	96% 4%	0.260
n = number of study sample. Significant * p < 0.05, ** p < 0.01, *** p< 0.001					

Table IV: Multivariate logistic regression analysis of risk factors for Prediabetes.

Variable	B	SE	t	OR (95% CI)	*p* Value
Gender	0.099	0.142	0.698	0.572 (0.183-0.380)	0.487
Family history of DM	0.002	0.004	0.568	0.403(0.010-0.006)	0.572
Physical activity	0.059	0.030	1.973	0.307(0.000-0.118)	0.052
Smoker	0.001	0.104	0.012	0.504 (0.206-0.208)	0.990
Central obesity	0.038	0.061	0.612	0.915 (0.084-0.159)	0.542
Sleep disturbance	0.171	0.090	1.904	1.84(0.350-0.007)	0.050
SE; standard error, OR; odd ratio, 95% CI; 95% confidence interval					

Discussion

A total 100 students participated in our study. 57% of them were female and 43% were male with mean age of 21.82 ± 1.80 years ranges from 19 to 25 years. A total 65 students having normal blood glucose level and 35 (23 female and 12 male) had raised blood glucose level and recognized as prediabetes. Rao T have found 17.57% prediabetes and other studies having female predominance.[24–26]

In the present study 74% students reported a family history of diabetes with their parents or

grandparents. Chowdhury found higher prevalence of prediabetes with no family history of diabetes but other researchers provides evidence of significant association between family history of diabetes and the prevalence of prediabetes.[26–29]

In this study 29% students were overweight, 15% were obese and majority of them (53%) had central obesity. Obesity and prediabetes are associated with insulin resistance and accumulation of inflammatory mediators in plasma. Other researchers have found similar result with us.[24,30,31]

In our study, the total number of 41 smokers were found as prediabetic. Nicotine causes inflammation throughout the body, superimposed on genetic predisposition and ultimately increases insulin resistance, Abdulbari Bener found smoking and family history are important contributors to Diabetes.[25,27,33] We found alarming prevalence of stress (96%) and sleep disturbance (69%). Medical students of United States and Lithuania reported poor sleep quality 51% and 59% respectively.[34,35] Abdullah I found 53% students having stress and 76% with poor sleep quality.[36] The prevalence of stress in medical students of Pakistan, Thailand, and United States and Malaysia was 60%, 61%, 57% and 42% respectively.36 Poor sleep and depression are associated with the metabolic syndrome, insulin resistance , and diabetes.[37]

In our research work, the family history of diabetes mellitus , regular physical activity and sleep disturbance were found to be significantly ($p<0.05$) influencing the prediabetes but BMI, central obesity , stress and smoking habit was not significant statistically ($p>0.05$). Amaranth et all found that the students having obesity, family history, and physical inactivity are at high risk of prediabetes.[32] Small sample size and the study population from a medical college limits the extrapolation of the data to the general population. Another limitation is the use of self-reported data about smoking, sleep disturbance and stress; and the assumption that participants responded honestly and accurately.

In the present study, family history, physical inactivity and sleep disturbances are significantly acting as risk factors for development of prediabetes. Moreover sleep disturbance is strongly associated with prediabetes.

Conclusion

The result from this study concluded that early diagnosis and appropriate measures can delay the natural progression of the Prediabetes. So, Prediabetes and other high-risk individuals should be advised regular monitoring at least once yearly through educational program on lifestyle modifications to delay the onset of diabetes mellitus.

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Contribution of the Authors

The study was a substantial team work of the principal author and co-authors. Dr. Monira Khatun was largely involved in initiation, designing and developing case record form, Dr. Muhammed Abu Bakar coordinating the data collection procedure, Dr. Nihad Rownak contributed in literature

review, Dr. Farhena Ahmed in writing the manuscript of the study, Professor Jesmin Abedin and Professor Shaheda Khanam contributed in reviewing data analysis and writing result.

Disclosure

All the authors declare no competing interest

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Original Article

Comparative Study of Polymerase Chain Reaction (PCR) and Conventional Methods for the Diagnosis of Pneumococcal Meningitis in CSF of Under Five Children in Chattogram Medical College, Chattogram.

***Rozario DTD[1]**

Abstract

Background: *Bacterial meningitis is an important cause of mortality and long term morbidity. Early and accurate diagnosis of bacterial meningitis is of critical concern. Though bacterial culture is considered as gold standard, this approach has some disadvantages with regard to rapidity and sensitivity. This has motivated the evaluation of alternative diagnostic strategy.* ***Objectives:*** *This study was performed to compare between polymerase chain reaction (PCR) and conventional methods for the diagnosis of pneumococcal meningitis in under five children.* ***Materials & Methods:*** *This cross sectional study was carried out in the Department of Microbiology, Chittagong Medical College for cytological examination, biochemical tests, Gram's stain, culture, and PCR for lytA gene of Streptococcus. pneumoniae in CSF.* ***Results:*** *Among the 68 cases of probable bacterial meningitis, culture was positive in 22 (32%) and Gram's stain was positive in 17 (25%) cases. Streptococcus pneumoniae was the predominant organism detected by isolation in 11 (50%). PCR detected 27 (46.67%) cases of S. pneumoniae among 57 bacterial meningitis cases. All the culture and Gram's stain positive cases for Streptococcus pneumoniae were also positive by PCR. The Sensitivity, Specificity, Positive predictive value and Negative predictive value of PCR were 100%, 65%, 41%, and 100% respectively by using CSF culture as gold standard.* ***Conclusion:*** *PCR was highly sensitive and specific and PCR was found superior to other available methods for detection of bacterial meningitis.*

Keywords: CSF, PCR, Pneumococcal meningitis

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Introduction

Acute bacterial meningitis (ABM) is one of the most dramatic medical emergencies which is seen as a public health challenge worldwide. The disease is dreaded for its acute devastating onset in previously healthy individuals and difficulty in obtaining a timely and accurate diagnosis.[1] Globally 1.2 million cases of bacterial meningitis are estimated to occur every year with 1,35000 deaths.[2] The disease is much more common in developing countries than the developed countries. Gurley et al. (2009) from Bangladesh reported that among all meningitis cases bacterial meningitis constitutes 25% and case fatality rate was 14%.[3] The bacterial meningitis epidemiological landscape is not static and etiological agent varies with age and immune status and different geographic area. Incidence of confirmed Hib meningitis in Bangladeshi infants was 92/100000 in pre vaccine period. The incidence dramatically declined to 15.7 cases/100000 children a year after introduction of the vaccine.[4] So except during an epidemic of meningococcal infection, Streptococcus pneumoniae is the commonest cause of acute bacterial meningitis.[5] Because of the high mortality and morbidity resulting from bacterial meningitis, rapid and accurate diagnosis is needed to increase the survival rate and decrease complications. Though Gram's stain is simple, rapid and less expensive method for detecting bacteria but it has some limitations. The yield of bacteria on a Gram's stain depends on several factors like the number of organisms present, prior use of antibiotic, technique used for smear preparation (centrifuged deposit, cytospin, direct smear etc.). The gold standard for diagnosis of any infection including meningitis is the isolation and identification of the causative agent.[6] But it requires a day or more for growth and can also give false negative result

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due to the preceding antibiotic therapy before admission or meningitis due to fastidious organisms.[1] The increasing practice of preadmission administration of parenteral antibiotic therapy and reluctance to perform lumber puncture at admission are pointed out to contribute a decrease in culture confirmed cases in several countries.[7] So an alternative method for the diagnosis of bacterial meningitis is required which is rapid, reliable, less time consuming, easy to perform, sensitive and specific. Polymerase chain reaction (PCR) is highly sensitive and specific technique for diagnosis of bacterial meningitis.[8] PCR now can detect low number of pathogens in clinical specimens which does not require the presence of viable organisms.[9] So the purpose of the study was to determine the frequency of pneumococcal meningitis in under five children, to assess the diagnostic efficacy of PCR in identifying *lytA* gene of Streptococcus.

Materials and Methods

A total of 272 clinically suspected patients of meningitis of age ranging from 0 day to 5 years from Neonatal, Pediatrics wards and Medicine wards of CMCH and CMOSH, Chittagong were included in this study. This cross sectional descriptive study was carried out during the period of July 2019 to June 2020. Ethical clearance was duly obtained from Ethical Review Committee, Chittagong Medical College, Chittagong.

Clinically suspected patients of meningitis with high body temperature, signs of meningeal irritation, i.e. neck rigidity, Kernig's sign, Brudzinski's sign, headache, vomiting, altered level of sensorium, high pitched crying and photophobia were included in this study. Patients treated with injectable antibiotics for 48 hours before admission, patient with brain hypoxia and brain trauma, patients in whom performing lumber puncture was contraindicated and patients who did not give consent were excluded from the study.

Laboratory method: Standard methods were used for the analysis and culture of CSF specimens collected from all suspected patients. Immediately after receipt, each CSF specimen was centrifuged at 1500 rpm for 15 minutes. The supernatant was removed and the sediment was cultured on 5% sheep blood agar and chocolate agar and MacConky's agar plates then incubated in a 5% CO_2 at 35°C for 48-72 hours. Gram staining was also performed. All isolates were identified based on their colony, morphology, culture characteristics, and biochemical reactions according to the standard microbiological procedures. Furthermore, cytological test and biochemical tests were done according to manufacturer's instruction (Protein & Glucose estimation by Flutitest USP, Analyticon, Germany). CSF was preserved at -70°C for DNA extraction. DNA was extracted according to Patho Gene-spin DNA extraction Kit, Intron Biotechnology). Primer sequence used for amplification was 5 / - T G A A G C G G A T T A T C A C T G G C - 3 / , 5/GCTAAACTCCCTGTATCAAGCG-3/.[10] Protocol of Thermal cycles of PCR for detection of lytA gene: Initial denaturation at 94°C for 3 minutes- 1 cycle, Denaturation at 92°C for 40 seconds, Primer annealing at 55°C for 30 seconds, Extension at 72°C for 20 seconds -35 cycles, Final extension at 72°C for 10 minutes-1 cycle.[11] Four microliters of the PCR reaction was loaded onto a 1.5% agarose gel containing ethidium bromide (0.5 mg/m) and gel electrophoresis was done for 20 minutes to separate PCR products. Presence of a 273-bp band under UV transilluminator was considered to be a positive.

Results

A total 272 clinically suspected meningitis cases were enrolled in this study from Chittagong Medical College Hospital (CMCH) .Table 1 shows categories of study population, according to cytological and biochemical findings, 68 (25%) were categorized as probable bacterial meningitis cases and 129 (47.22%) cases were viral meningitis, normal level of protein, glucose and cell count were found in 75 (27.78%) cases. Figure 1 shows, out of 68 probable bacterial meningitis cases, 17 (25%) were found positive by Gram stain, 22 (33.33%) cases were found positive by culture (Figure 2) and 27 (46.67%) cases were positive for S. pneumoniae by PCR for lytA gene among 57 probable bacterial meningitis cases (Figure 3). Table 2 Shows that among the 22 culture positive cases majority of the isolates were S. pneumoniae 11 (50%) followed by N. meningitidis 05 (23%), H. influenzae 3 (13.64%), E. coli 2 (9.1%) & S. aureus 1(4.54%). Table 3 shows comparison of culture with PCR by Chi-square test. The difference between culture and PCR to detect pneumococcal meningitis was statistically highly significant ($p < 0.01$). Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value were 100%, 65%, 41%, 100% respectively for lytA gene of S. pneumoniae by PCR considering culture as gold standard.

Table I : Showing categories of study samples according to cytological and biochemical (protein, glucose) findings

Biochemical & Cytological findings	Category	Frequency	Percentage (%)
Elevated Protein, Reduced Glucose, Neutrophilic pleocytosis> 100/ mm^3	Probable Bacterial meningitis	68	25
Protein elevated, Glucose level normal, Lymphocytic pleocytosis	Probable Viral meningitis	129	47.22
Protein level normal, Glucose level normal, Normal cell count	Normal	75	27.78
Total		144	100

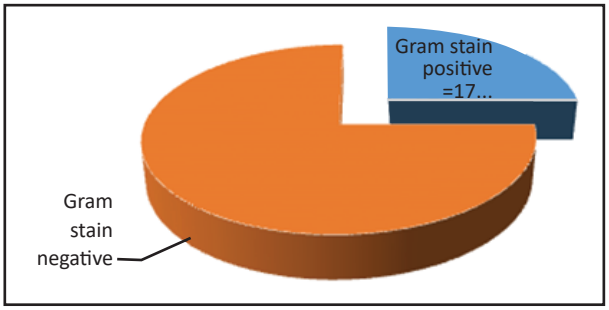

Figure 1: Results of Gram stain among the probable cases of bacterial meningitis

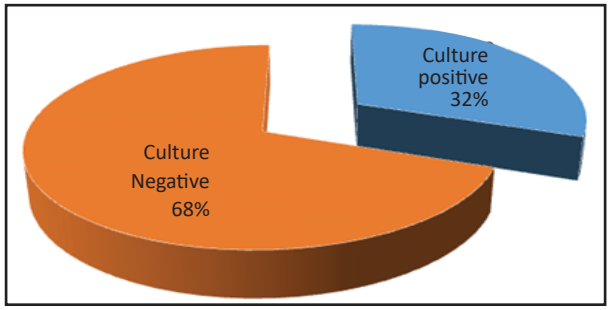

Figure 2: Results of culture among the probable cases of bacterial meningitis

Table II : Distribution of bacterial isolates among 22 CSF culture positive cases

Organism	Frequency	Percentage (%)
Streptococcus pneumoniae	11	50
Neisseria meningitidis	5	23
Haemophilus influenzae	3	13.64
Escherichia coli	2	9.1
Staphylococcus aureus	1	4.54
Total	22	100

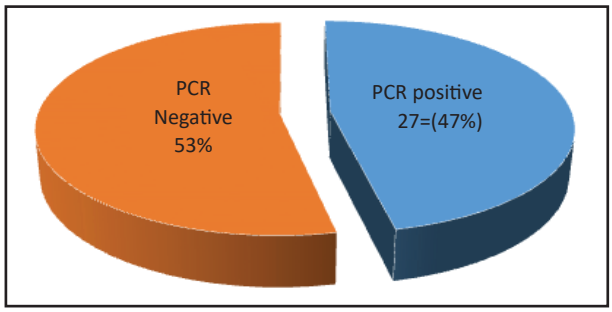

Figure 3: Results of PCR for lytA gene of S. pneumoniae among the probable cases of bacterial meningitis (n=57)

Table III : Comparison and evaluation of performance of PCR for detection of pneumococcal meningitis considering culture as gold standard

		Bacterial culture			Total
		Positive	Negative		
PCR	Positive	11	16	27	Sensitivity=100% Specificity=65%
	Negative	0	30	30	Positive predictive value(PPV) = 41% Negative predictive value(NPV) = 100%
Total		11	46	57	

χ2 Value= 8.57, p <0.01, highly significant

Discussion

Bacterial meningitis is still a very common and serious disease.[11] Globally 1.2 million cases of bacterial meningitis are estimated to occur every year with 135,000 deaths.[2] The case fatality rates (CFRs) in bacterial meningitis is 26% in developed countries even with antimicrobial therapy and availability of advanced intensive care which are higher ranging from 16-32% in developing countries.[12,13] On the basis of cytological and biochemical examinations of CSF, the study population was categorized into three groups. We found probable bacterial meningitis 68 (25%) cases, probable viral meningitis 129 (47.22%) cases and normal CSF 75 (27.78%) cases (Table 1). Negrini et al. (2000) had observed bacterial meningitis 20 (45%), aseptic meningitis 138 (64%) and non-meningitis group 18 (12.0%) cases.[14] Similarly, Narchi in Saudi Arabia (1997) observed in his study that 35 (35.7%) were bacterial meningitis and 63 (64.3%) were aseptic meningitis, which are comparable with the present study.[15] Figure 1 shows Gram stain provided an evidence of the causative bacteria in 17 (25.00%) cases which is similar to the observation by Yahia et al. 2014 (29.1%) but higher than that found by Saravalotz et al. 2003 (14.9%) & Schuurman et al. 2003 (9.31%) but much lower than that detected by Favaro et al. 2012 (75%).[7,16-18] The low yield of bacteria on gram stain can be explained by the facts that Gram stain depends on several factors like the number of pathogen present in the sample, prior use of antibiotics, technique used for smear preparation (cytospin centrifugation, direct smear etc.). In the present study, out of 68 probable cases of bacterial meningitis, 22 (32%) cases were positive by culture (Figure 2) which is similar to that found by Yahia et al. 2014 (34.5%).[16] Several studies showed culture negative cases of meningitis or a low CSF culture positivity ranging from 6 to 50% (Kabra et al.1991, Das et al. 2003, Chinchankar et al. 2002).[19-21] These variations of low yield of bacteria on culture may be due to antibiotic therapy prior to lumber puncture which is a common practice in developing countries. S. pneumoniae (50%) was the predominant organism followed by N. meningitidis (25%). H. influenzae (13.64%) E. coli (9.1%), S. aureus (4.54%) were

found (Table 2). Similar findings were observed by Reza et al. (2012) and Wellinder-Olson et al. (2007) who found S. pneumoniae was the predominant organism of bacterial meningitis.[22,23] In our study PCR analysis for lytA gene of S. pneumoniae detected 27 cases (47%) among 57 cases of probable bacterial meningitis(Figure 3). A similar study of PCR techniques conducted by Mashal Khan et al. (2013) quoted 39.15% and Yahia et al. (2014) picked 35.45% positivity by PCR.[16,24] For the evaluation of performance characteristics of PCR, result of PCR assay was compared with CSF culture as gold standard. According to this data Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV) of PCR for detection of Streptococcus pneumoniae were 100%, 65%, 41%, 100% respectively. Sensitivity of PCR was 100% (Table 3) which compare favorably with the results of Saravalotz et al. 2003 (100%) but not in good agreement with that found by Tzanakaki et al. (92.30%).17,25 Specificity (73.33%) was higher than Chiba et al. 2009 (54%), Sarookhani et al. 2013 (40.6%) but lower than Saravalotz et al. 2010 (98.2%).[17,26,27] However this specificity of PCR does not reflect the true percentage because in many cases with negative bacterial culture, an antibiotic had been prescribed before the bacterial cultivation of the CSF.[28–31]

Limitations: We used only one primer (lytA gene) from a number of primers, specific for Streptococcus pneumoniae and primers for other causative organisms were not included.

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Contribution of Authors: DTDR: Conception, acquisition of data, interpretation of data, drafting the article and final approval.

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Conclusion & Recommendation

Due to prior use of broad spectrum antibiotics conventional method may not yield the pathogen. This reemphasizes the need for molecular technique like PCR which is a highly sensitive, specific, rapid method and most importantly does not need the organism to be viable and can detect even when the microbial concentration is very low.

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Original Article

Clinical Characteristics of Mild COVID-19 Patients and Implications of Traditional Measures for Remedy

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Abstract

Background: *In Bangladesh, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) had brought about assemblage of severe respiratory illness similar to that of Severe Acute Respiratory Syndrome Coronavirus and was also associated with a diverse range of symptoms. The aim of the study was to identify the clinical characteristics of mild Covid-19 patients and implications of traditional measures for remedy.* ***Materials and Methods****: It was a cross sectional study conducted in the Medicine Department of Combined Military Hospital (CMH), Dhaka from February to May, 2022 on 210 COVID-19 positive patients with mild symptoms between 20 and 50 years of age.* ***Results:*** *Majority of respondents (62.9%) belonged to age 50-59 years with M±SD (50.53± 7.361) and 61.4% were male. Among 210 COVID-19 positive patients, about 92 (43.8%) were asymptomatic and among remaining 118 mild symptomatic individual; runny nose (91.5%), exhaustion (93.2%), sore throat (83.0%), headache (76.2%), loss of taste and smell (66.1%), diarrhea (60.1%) was common. Moreover, fever (37.5 °C) was noted in only 15 (12.7%) individual. All positive cases (100%) consumed tea and hot water, 205 (97.6%) took lemon water, 95.2% took adequate water and 90.4% took Kalijera as traditional home remedy product.* ***Conclusion:*** *Mild COVID-19 cases may present with runny nose, exhaustion, sore throat, headache and may not need hospital admission, rather home isolation with traditional home remedy can give better comfort to mild COVID-19 patient alongside other required medications.*

Keywords: COVID-19, Home remedy, Mild symptom

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Introduction

The COVID-19 pandemic created a detrimental effect on health system that becomes a public health challenge for whole world including Bangladesh. Novel coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) began in Wuhan, China, in December 2019, and has since spread worldwide.[1] By now this pandemic has reached to 40,251,950 confirmed cases of COVID-19, including 1,116,131 deaths, reported to WHO. The outbreak spread globally from the Chinese city of Wuhan to more than 180 countries and territories.[2]

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COVID-19 caused by novel strain of Coronaviruses belonging to the family Coronaviridae, an enveloped positive-sense single-stranded RNA viruses. Though it is zoonotic in nature it (surprisingly) spread among humans, ultimately causing damage in respiratory, digestive, cardiac and other systems.[3] Several studies of COVID-19 has suggested that intensive physical distancing could "flatten the curve" and prevent the overloading of our health systems. To reduce the frequency of physical contact and subsequent transmission of the virus between persons, social distancing, school closings and stay-at-home measures were commonly adopted practices world-wide.[4] Around 80% of COVID-19 infections presenting as a mild respiratory illness who were otherwise healthy had been managed at home but it can take up to 14 days. Around 15% required hospital care (usually for moderate-to-severe pneumonia) and another 5% had critical illness requiring more intensive case and support.[5] Studies have shown that spectrum of mild COVID-19 cases remain fever, dry cough, dyspnea and fatigue. In more

severe cases, infections caused viral pneumonia that could lead to severe acute respiratory distress syndrome (ARDS), and, even, death.[6] Pharyngodynophy, nasal congestion, and rhinorrhea have also been described in patients with COVID-19.[7] Alternative Medical Care Department of the Directorate General of Health Services (GoB) reported that traditional herbal remedies boosts immune system, increases self-resistance and keeps in check the symptoms of COVID-19. Consuming warm water with ginger and clove extracts, black cumin seeds, honey and fruits with vitamin C recede the symptoms of COVID-19.[8] To boos-t up immunity, many COVID-19 infected individual looks for extra defense by consuming different dietary supplements and herbal remedy from a belief that it had higher safety tolerances than the standard pharmaceutical drugs. These herbal medications and home remedy may have strengthened patient's well-being.[9]

We aimed to describe the clinical characteristics of mild COVID-19 patients and implications of traditional measures for prophylactic care and self-resistance to preserve personal protection and immunity. This study will inform the community of the emergence of virus and traditional remedy of the disease.

Materials and Methods

This cross sectional study among confirmed COVID-19 cases was conducted at the Combined Military Hospital (CMH), Dhaka from February to May, 2022. A total of 210 RT PCR positive COVID-19 patients (31-59 years of age) having mild symptoms were enrolled in this study, purposively. Moderate-to-severe and critical COVID-19 patients requiring admission were excluded from this study. Data were collected employing face to face and/or telephone interviews among patients who reported to fever clinic as COVID-19 patients and were advised for home isolation. Socio-demographic and clinical data were collected and evaluated by experienced clinicians using a pretested case record sheet. Data were collected in structured questionnaire for analysis. Severity of the COVID-19 cases was assessed based on the WHO interim guidance. Ethical clearance was obtained from Ethical Review Committee (ERC) of Combined Military Hospital (CMH) Dhaka. All collected data were analyzed by using SPSS (Statistical Package for Social Science) version-25. Frequency and percentage for categorical variables, M (±SD) and Chi-square test were used among categorical variable to determine the association between outcome and independent variables. A p value less than .05 were considered as significant all through.

Results

Majority of the patients, i.e., 132 (62.9%) represented the age group of 50-59 years. The mean (M ± SD) age of the patients was 50.53 ± 7.361 years with male dominant respondents (61.4%). Majority i.e., 53 (25.2%) were having SSC level education and average monthly income was TK. 34,304.76 (SD ± 19,609.159). Among the patients, 111 (52.9%) had 5 - 6 members in their family (Table-I).

Regarding exposure history on last 14 days 146 (69.5%) had exposure history and rest 64 (30.4%) had no exposure history to contact or suspected contact (working place, grocery shop, market, public transport and used elevator) which was statistically significant (p =0.000). The frequency of exposure to COVID-19 virus on the situation of more than one minute and a distance of at least one meter were assessed where a vast majority 78 (37.1%) exposed to virus for 6-10 times, 71 (33.8%) for one to four times and only 24 (11.4%) for more than 16 times (χ 2 = 22.363, p = 0.000) (Table II).

Of 210 RT-PCR confirmed individuals with COVID-19 about 92 (43.8%) had remain asymptomatic for the full duration of illness until

Table I: Distribution of respondents by demographic characteristics (n = 210)

Attributes	*n* (%)	Attributes	*n* (%)
Age of respondents (years)		**Monthly family income (taka)**	
30-39	22 (10.5)	7,000 - 20,000	30 (14.3)
40-49	56 (26.7)	21,000 - 50,000	88 (41.9)
50-59	132 (62.9)	51,000 - 1,00,000	92 (43.8)
M ± (SD)	50.53 ± 7.361	*M ± (SD)*	34304.76 ± 19609.159
Min-Max	31 - 59	Min-Max	7000 - 100000
Gender		**Occupation of the respondents**	
Male	129 (61.4)	Service	63 (30)
female	81 (38.6)	Retired	46 (21.9)
Religion		Business	20 (9.5)
Islam	206 (98.1%)	Housewife	81 (38.6)
Hindu	4 (1.9%)	**Family type**	
Others	0 (0%)	Nuclear	205 (97.6%)
Educational qualification		Joint	5 (2.4%)
Illiterate	11 (5.2)	**Number of family members**	
Primary	39 (18.6)	2 - 4	79 (37.6)
Secondary	45 (21.4)	5 - 6	111 (52.9)
SSC	53 (25.2)	7 - 10	20 (9.55)
HSC	33 (15.7)	*M ± (SD)*	4.99 ± 1.312
Graduation and above	11 (5.2)	Min-Max	2-10

they become negative. In the remaining 118 individuals; running nose (91.5%) was the most common symptom, followed by exhaustion (93.2%), sore throat (83.0%), headache (76.2%), loss of taste and smell (66.1%), diarrhea (60.1%). Fever (37.5 °C) was noted in only 15 (12.7%) individual. The detail clinical characteristics of symptomatic patients are shown in Table III.

Table II: Exposure frequency of the respondents to COVID-19 virus on last 14 days (n = 210)

Exposure frequency (Times)	COVID-19 infected n (%)	Significance
1 - 5	71 (33.8)	$\chi^2 = 22.363$
6 - 10	78 (37.1)	
11 - 15	37 (17.6)	$p = 0.000$
≥16	24 (11.4)	
Total	**210 (100)**	

Level of significance: $p < .05$

Table III: Clinical presentations of the symptomatic individual with mild COVID -19 (n =118)

Variables	*n* (%)
Fever (>37.5 C)	15 (12.7)
Rhinorrhea **	108 (91.5) **
Cough	47 (39.8) #
Sore throat **	98 (83.0) **
Loss of smell / taste #	78 (66.1) #
Myalgia #	24 (20.3)
Diarrhea	71 (60.1) #
Exhaustion **	110 (93.2) **
Chest pain	20 (16.9)
Shortness of breath	5 (4.2) #
Shivering	2 (1.6) #
Nausea	37 (31.3)
Headache **	90 (76.2) **
Abdominal pain #	60 (50.8) #
Eye ach	10 (8.47) #

*Multiple responses. ** Constituted the most symptomatic manifestations of our Covid-19 cases at the CMH during Feb-May 2022. ## Constituted less symptoms & # constituted the least no. (%) of symptoms.

All positive cases (100%) consumed tea and hot water frequently, additionally 205 (97.6%) took lemon water, adequate water (95.2%), 190 (90.4%) took Kalijera (Table IV).

Table IV: Traditional measures adopted for remedy of COVID-19(n =210)

Variables	*n* (%)
Tea	210 (100)
Lemon water	205 (97.6)
Hot water	210 (100)
Adequate water	200 (95.2)
Ginger water	190 (90.4)
Honey	198 (94.2)
Clove	55 (26.1)
Kalijira	190 (90.4)
Turmaric water	67 (31.9)
Hot Water vapor with Menthol	180 (8.57)

Discussion

COVID-19 remains a highly transmissible contagious virus that affect people within short period of contact and appearance of clinical features that may have varied from asymptomatic, to mild, moderate or severe.

Our analysis of exposure to contact and suspected contact revealed a relatively short (30.4%) chance of infection in individuals without exposure and a high rate (69.5%) of chance of infection in case of exposed individual. And in exposure frequency to COVID-19 virus (more than one minute and a distance of at least one meter) found that, a most 78 (37.1%) exposed to virus for 6-10 times, 71 (33.8%) for one to four times and only 24 (11.4%) for more than 16 times (χ 2 = 22.363, p = 0.000). Similarly, Goldstein evidenced that increase of infection were due to lesser cohesion to exposure.[10]

In our current study, about 92 (43.8%) had remain asymptomatic and rest 108 (91.5%) patients presented with rhinorrhea followed by 110 (93.2%%) exhaustion, 98(83.0%) sore throat, headache (76.2%), loss of taste and smell (66.1%), diarrhea (60.1%) while fever (37.5 °C) was observed only in 15 (12,7%) individual. However, Chowdhury et al. observed in their study COVID-19 patients in Bangladesh commonly presented with fever, cough, fatigue, shortness of breath, and sore throat, but symptoms like myalgia, diarrhea, skin rash, headache, abdominal pain/ cramp, nausea, vomiting, restlessness, and a higher temperature (>108° F) have a greater presentation rate.[11] Contrarily, Ahmed et al. reported fever as the dominant presenting feature (77%), followed by cough in 71 (35.5%), headache in 27 (13.5%), myalgia in 25 (12.5%), sore throat in 25 (12.5%), malaise in 15 (7.5%) and respiratory distress in 11 (5.5 %), which were similar to that of our observations though not equally distributed of these symptoms.[12]

Guan et al. Wang et al, Zangh et al. found fever and cough as a predominant feature.[13–15] Rodriguez-Morales et al. studied 656 cases where they found more fever (88.7%), cough (57.6%), dyspnea (45.6%), myalgia or fatigue (29.4%) as more prevalent symptom.[16] Similarly, in a meta-analysis by Zhu J et al. found fever (80.4%), cough (63.1%) and fatigue (46%) as most common symptoms.[17] A study on the systematic review focusing on upper airway symptoms revealed that the common symptoms of COVID-19 were fever, cough and fatigue.[17] Kim et al. revealed that fever is the least common in mild case as the initial symptom and most common initial symptom were cough (40.1%) and 39.5% presented with hyponosmia.[18] These features remain consistence with that of our study where we found only 15 (12.7%) cases who had fever.

We studied the various home remedy adopted by the asymptomatic and mild COVID-19 cases where all positive cases (100%) consumed lemon tea and hot water repeatedly and in addition 205 (97.6%) took lemon water, adequate water (95.2%), 190 (90.4%) took Kalijera, 198 (94.4%) consumed honey and inhaled hot water vapor with menthol

that relieved the patients from various symptoms. However, Azam et al. reported various data on home remedies for COVID-19 patients such as, leafy juice of Ocimum sanctum and Vitex negundo, lemon (Citrus limon) juice, sliced rhizomes of ginger (Zingiber officinale), tea, seeds of Nigella sativa, honey.[19] Home remedies used in Bangladesh (and elsewhere) can be promising, because these old age treatments can cause mitigation of COVID-19 symptoms. In Pakistan garlic, turmeric, ginger, cinnamon, black pepper and honey are also used as home remedies against COVID-19, as well.[20]

All these scenarios evidences that Covid-19 is continuing to spread virus being more asymptomatic and is mild forms. We, therefore, need to recognize these to minimize the spread of infections and its risks. Though mild cases recover within a few days of Covid-19 infection, due to the panic of COVID-19, people take all sorts home remedies along with other medications at home. Since these finding of Covid-19 is based on a single hospital (MCH), it is essential to conduct similar studies to verify by large sample with multi-center study and clinical trial requiring to assess the effects and efficacy of the components of home remedy approach, more prudently.

Conclusion

COVID-19 has become a pandemic and has disrupted the daily life and economic stability of billions of people throughout the world. Injurious stimuli of COVID -19 cause specific and non-specific manifestations of various organs. Our study analyzed that running nose was the most common symptom, followed by exhaustion, sore throat, headache, loss of taste and smell and diarrhea as the common onset symptoms of COVID-19 in our settings of CMH. Fever was less common in mild COVID-19 cases in our community. Moreover, as there is lack of any effective pharmaceutical interventions for COVID-19, traditional remedy measures can be adoption as a supportive treatment in mild cases.

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Original Article

Antimicrobial Resistance Pattern of Gram Negative Urinary Pathogens Isolated From a Tertiary Hospital in Jashore City, Bangladesh

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Abstract

Background: *Urinary tract infections (UTIs) remain the common infections diagnosed in outpatients as well as hospitalized patients. Current knowledge on antimicrobial susceptibility pattern is essential for appropriate therapy.* ***Objectives:*** *This study was carried out in order to isolate and identify the pathogens associated with UTI in a tertiary hospital of Jashore and to determine their antimicrobial resistance patterns.* ***Materials and Methods:*** *This study was carried out in the laboratory of the Department of Microbiology, Ad-din Sakina Women's medical college, Jashore, Bangladesh from June to December 2023. A total of 505 urine samples were collected in sterile containers from suspected urinary tract infected cases. A specimen was considered positive for UTI if an organism was cultured at a concentration of ≥105CFU/ml or when an organism was cultured at a concentration of 104CFU/ml and >5 pus cells per high power field. Antimicrobial susceptibility testing of the isolated bacterial species was performed by disc diffusion method following the National Committee for Clinical laboratory Standards (NCCLS) guidelines.* ***Results:*** *A total of 216 (42.78%) bacterial uropathogens were isolated from 505 urine samples. Among the 216 isolates, most predominant organism was Escherichia coli 178 (82.41%) followed by Pseudomonas 15 (6.94%), Klebsiella 7 (3.24%). Escherichia coli showed very high resistance to cefradin 90.16%, and Klebsiella to amoxycillin and cefradin 85.71%. Again, Pseudomonas was highly resistant to cotrimoxazol 80%. Proteus was 100% resistant to amoxicillin, cefotaxim, and ciprofloxacin.* ***Conclusion:*** *This study justifies the necessity to treat patients with UTI based on antimicrobial susceptibility test result in order to prevent evolution of resistant pathogens. Since UTI has large impact on the socio-economy and emergence of bacterial resistance, periodic surveillance of antibiotic susceptibility is strongly recommended.*

Keywords: Gram negative bacteria, Antimicrobial resistance, UTI.

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Introduction

Urinary tract infections (UTI) are among the most common conditions encountered in office practices.[1] This is also leading cause of Gram-negative sepsis in hospitalized patients.[2] It is the second most common infections in community practice with approximately 150 million diagnosed cases each year.[3]

UTI encompasses both asymptomatic microbial colonization of the urine and symptomatic infection with microbial invasion and inflammation of urinary tract structures.[2] The etiology of UTI and the antimicrobial susceptibility of urinary pathogens in both the community and hospitals have been changing, and in recent years antibiotic resistance has become a major problem worldwide due to several factors related to the genetic nature of the organisms and selective antimicrobial pressure in humans and animals.[2] World Health Organization (WHO) recommends for the emergence of hospital and community acquired resistant bacterial infections due to inappropriate and irrational uses of antibiotics in humans and animals for the therapeutic and nontherapeutic purposes (as growth promoters).[4]

The surveillance of previous studies showed bacterial antimicrobial resistance pattern can differ significantly from one country to other even different regions within the same country.[5]

The resistance pattern of uropathogens is changing drastically, specifically in developing countries,

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such as Bangladesh because of uncontrolled and widespread use of antibiotics. Antibiotics are usually given empirically before the laboratory results of urine culture are available. To ensure appropriate therapy, current knowledge of the organisms that cause UTI and their antibiotic susceptibility is mandatory.[6] Due to rising antibiotic resistance among uropathogens, it is important to have local hospital-based knowledge of the organisms causing UTI and their antibiotic sensitivity patterns.

This study is, therefore, designed to determine the bacterial uropathogens and their antibiotic resistance patterns among patients with complaints of UTIs in Jashore city, Bangladesh.

Materials and Methods

This cross-sectional study was carried out in the laboratory of the Department of Microbiology, Ad-din Sakina Women's medical college, Jashore city, Bangladesh. The duration of the study were 6 months (June to December, 2023). Patients admitted in inpatient department and visited the outpatient department of Ad-din Sakina Women's me dical college, Jashore with suspected UTI cases was included in this study. Written consent was taken from the concerned authority.

Clean catch midstream and/or catheter catch urine samples were collected into a sterile container/test tube aseptically. Sterile platinum wired calibrated loop was used which delivered 0.001 ml of urine. A loopful urine sample was plated on Blood agar media and MacConkey agar media. The inoculated plates were incubated at 37ºC for 24 hours and extended to 48 hours in culture negative cases. The plates were then examined macroscopically for bacterial growth. A specimen was considered positive for UTI if an organism was cultured at a concentration of ≥ 105CFU/ml or when an organism was cultured at a concentration of 104CFU/ml and >5 pus cells per high power field were observed on microscopic examination of the urine.[7]

Identification of bacterial pathogens was made on the basis of Gram reactions, morphology, motility test, biochemical and cultural characteristics.[8] Antimicrobial susceptibility testing of the isolated bacterial species was performed by disc diffusion method following the National Committee for Clinical laboratory Standards (NCCLS) guidelines.[9] All discs were obtained from Oxoid Ltd. Antibiotics used for uropathogens were amoxycillin (10µg), ciprofloxacin (5µg), gentamicin (10µg), cefradine (30µg), ceftriaxone (30µg), ceftazidime (30µg), cotrimoxazole (25µg), imipenem (10µg), meropenem (10µg), amikacin (30µg), nitrofurantoin (300µg), netilmicin (30 µg) and levofloxacin (5µg).

Results

Table 1 showed out of 505 urine samples 216 (42.78%) were bacterial isolates. Among them most predominant organism was Escherichia coli 178 (82.41%) followed by Pseudomonas 15 (6.94%), Klebsiella 7 (3.24%), Staphylococcus aureus 6 (2.78%), Proteus 4 (1.85), Enterococci 3 (1.39%) and Coagulase negative Staphylococcus (CnS) 3 (1.39%).

Table I: Pattern of bacteria isolated from urine culture (n=216)

Isolated organisms	Number of isolates (%)
Escherichia coli	178 (82.41%)
Pseudomonas spp.	15 (6.94%)
Klebsiella spp.	7 (3.24%)
Staphylococcus aureus	6 (2.78%)
Proteus spp.	4 (1.85%)
Enterobacter	3 (1.39)
CnS	3 (1.39)
Total	216

CnS; Coagulase negative Staphylococcus

Antimicrobial resistance pattern of uropathogens (Gram negative rods) had been shown in Table 2.

Escherichia coli showed very high frequency of resistance to cefradine 90.16%, moderately high resistance to amoxycillin 72.4%, azithromicin 64.96%, ciprofloxacin 53.76%, ceftriaxon 46.48%, cefotaxim 45.36%, and low resistance to nitrifurantoin 10.08% and imipenem 1.12%. Pseudomonas was 80% to cotrimoxazole, 73.26% to ceftazidim, 66.6% to cefotaxime, 60% to ceftriaxone, 40% to ciprofloxacin and amoxycillin. Low resistance showed in gentamicin 13.32% and nitrofurantoin 13.32%.

Klebsiella was 85.71%% resistant to amoxycillin as well as cefradin, 71.42% to ceftazidim and azithrimicin, 57.14% to ciprofloxacin and 57.14% to levofloxacin. Proteus was 100% resistant to amoxicillin, cefotaxim, ciprofloxacin, and azithromycin.

Table II: Antimicrobial resistance pattern of Uropathogens (Gram negative rods)

Drugs	*Esch. Coli* (n=178)	*Pseudomonas* (n=15)	*Klebsiella* (n=7)	*Proteus* (n=4)
Amoxycillin	129 (72.4%)	6 (40%)	6 (85.71%)	4 (100%)
Cefradine	161 (90.1%)	9 (60%)	6 (85.71%)	3 (75%)
Ceftazidim	54 (30.24%)	11 (73.26%)	5 (71.42%)	3 (75%)
Cefotaxim	81 (45.36%)	10 (66.6%)	3 (42.85%)	4 (100%)
Ceftriaxone	83 (46.48%)	9 (60%)	2 (28.57%)	0
Ciprofloxacin	96 (53.76%)	6 (40%)	4 (57.14%)	4 (100%)
Levofloxacin	45 (25.2%)	NA	4 (57.14%)	3 (75%)
Gentamicin	48 (26.88%)	2 (13.32%)	2 (28.57%)	0
Amikacin	20 (11.2%)	NA	0	0
Nitrofurantoin	18 (10.08%)	2 (13.32%)	1 (14.28%)	0
Netilmicin	36 (20.16%)	NA	NA	NA
Azithromicin	116 (64.96%)	9 (60%)	5 (71.42%)	4 (100%)
Cotrimoxazole	111 (62.16 %|)	12 (80%)	2 (28.57%)	3 (75%)
Imipenem	2 (1.12%)	0	0	0
Meropenem	0	0	0	0

NA, Not applied

Discussion

In this study, a total of 216 (42.78%) bacterial uropathogens were isolated from 505 urine samples. In our country 42.66% bacterial growth was isolated in other study which were similar and in 11.92% bacterial growth was isolated which were dissimilar with our study.[10,11] Escherichia coli was found to be the predominant isolates 82.41% causing UTI, followed by Pseudomonas 6.94%, Klebsiella 3.24%, Staphylococcus aureus 2.78% and Proteus 1.85% in our study (Table 1). Similar study in Bangladesh was previously reported by Jhora et al., who found the predominant isolated uropathogen was Escherichia coli 82.61% and Klebsiella 3.86%, Pseudomonas 3.14%, Proteus 1.45%, Staphylococcus aureus 0.24%.[12] A study from Kathmandu, Nepal showed that Escherichia coli was the most prevailing organism (81.3%).[13]

The present study showed the uropathogens as Escherichia coli, Klebsiella, Proteus were more than 70% resistant to amoxicillin (Table 2) which correlates with a study done in Bangladesh by Haque et al.[10] The increasing level of abuse of drugs by the public, where patients indulge in antibiotic self-medication, commonly to treat all kinds of infections, has been recorded as one significant way of promoting antibiotic resistance.[14,15]

In case of cephalosporin group, cefradine showed highest resistance to Escherichia coli 90.1% which correlates with a study done in Bangladesh by Azizun Nahar et al.[11] But around or more than 60% Pseudomonas, proteus and Klebsiella were resistance to cefradin which is dissimilar with the study of Azizun Nahar et al.[11] This variation further supports the fact that antimicrobial susceptibility pattern, varies from place to place and changes from time to time.

Ceftazidim showed resistance to E. coli 30.24%, Klebsiella 71.42% which correlates with a study done in Bangladesh by Rahman et al.[4] But ceftazidim resistant pattern of Pseudomonas and Proteus were dissimilar with Rahman et al study.[4]
In this study, ceftriaxone showed resistance to Escherichia coli 46.48%; 50%; Klebsiella 28.57% and Proteus 0%, similar picture is also noted in a study in case of cephalosporin group.[10,11] But

Ceftriaxone resistance to Pseudomonas 60% cases, which not correlate with Azizun Nahar et al study where 83.33% Pseudomonas were resistance to ceftriaxone, whereas in Bangladesh, another study done in Square hospital, Dhaka (November 2011 to February 2013) showed 100% sensitive to ceftriaxone in Pseudomonas.[11,16] This variation further supports the fact that antimicrobial susceptibility pattern, varies from place to place and changes from time to time.

Regarding fluoroquinolone group, in this study, more than 50 % E. coli, Klebsiella and 100 % Proteus were resistant to ciprofloxacin as well as 75% Proteus and 57.14% klebsiella were resistance to levofloxacin. This finding is alarming for the clinician to treat UTI. It is a great concern for them to choose effective drugs against organisms causing UTI. This high rate of resistance against fluoroquinolone was also suggested by other studies done in India, Spain, Iran and Europe.[17,18,19]

In this study about all gram-negative organisms showed high resistance to azithromycin and cotrimoxazole which correlate with another finding in Bangladesh.[4,11]

More over, in our study about all gram-negative organisms showed low resistance to nitrofurantoin. Nitrofurantoin was found to be reasonably high efficacious agent among all antimicrobials used to almost all uropathogens in a study in Bangladesh which correlates with our study.[10] In Nigeria greater percentage of the UTI isolates were sensitive to nitrofurantoin, it would be an excellent choice for UTI empiric therapy while awaiting the result of culture and sensitivity tests.[20]

Imipenem and meropenem were used in this study and found to be most sensitive drugs against all isolated uropathogens. Both the drugs were 100% sensitive to Klebsiella, Proteus, but Escherichia coli was 1.12% resistant to imipenem. This high level of sensitivity to imipenem could be due to its restricted and limited use in the clinical practice. Similar effectiveness of imipenem has also been reported from other countries.[21–23] Chowdhury et al. (2013) also found all the gram-negative bacteria were 98-100% imipenem sensitive.[24]

Conclusion

Gram-negative bacilli were mainly responsible for urinary tract infections and most of the strains were multi-drugs resistant. This study justifies the necessity to treat patients with UTI based on antimicrobial susceptibility test result in order to prevent evolution of resistant pathogens. Since UTI has large impact on the socio-economy and emergence of bacterial resistance, periodic surveillance of antibiotic susceptibility is strongly recommended.

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Case Report

Early Abdominal Pregnancy Diagnosis and Management- A Case Report

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Abstract

Abdominal pregnancy is a rare type of ectopic pregnancy associated with a high mortality rate. Abdominal pregnancies constitute approximately1% of all ectopic pregnancies. Mortality rates are 7.7 times higher than in tubal pregnancy, and 89.8 times higher than in pregnancy. Because of the rarity and associated mortality of abdominal pregnancies, early diagnosis and early recourse to intervention is paramount. Clinical features vary based on site and gestation at presentation. Ultrasound remains the primary means of diagnosis. Surgical intervention is the ideal best option for the treatment. We reported this case to study, diagnosis, management and outcome of abdominal pregnancy.

Keywords: Abdominal ectopic pregnancy, Laparotomy, Ultrasound.

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Background

Abdominal pregnancy is a rare form of ectopic pregnancy with high morbidity and mortality. There are a limited number of case reports of abdominal ectopic pregnancies. An abdominal ectopic pregnancy is a pregnancy that occurs outside of the uterus and instead in the abdominal cavity. Common forms of placental implantation in abdominal pregnancies include attachment on reproductive organs with subsequent rupture into the peritoneal cavity, as well as direct attachment to uterine serosa, omentum, bowel and mesentery. Abdominal ectopic pregnancies increase the risk of fatal intraperitoneal hemorrhage. Therefore, it is important to diagnose and effectively manage this rare type of pregnancy in order to reduce morbidity and mortality.[1] Abdominal pregnancy is an ectopic pregnancy where the fetus and placenta is implanted in the peritoneal cavity. Implantation in the ovary, tubes and broad ligaments are not considered as abdominal pregnancy by several experts. Multiparity, tubal damage due to pelvic inflammatory disease and endometriosis and previous tubal surgery are risk factors just like for any other ectopic pregnancy. Smoking is also a significant risk factor. In more than half of the cases, no obvious risk factor might be detected.[2] The recent use of progesterone only pills and intrauterine device with history of surgery and sexually transmitted disease increases the risk of ectopic pregnancy.[3]

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Case Report

A 26 year old lady with no past significant medical or surgical history, para 1, delivered by caesarean section 4 years back and history of 1 spontaneous abortion 2 years back, presented to the Gynae OPD of Ad-din Sakina Women's Medical College Hospital, Pulerhut, Jashore with the C/O- spotting and bleeding per vagina associated with severe abdominal pain for 1 day. Her menstrual period was regular and her last menstrual period was on 20/12/24. Now she is 6 weeks pregnant. She performed UPT at home and became positive. Upon arrival in hospital, she was conscious and oriented but she was severely anemic, her temperature was 36.9, respiratory rate was 14/min, heart rate was 100b/min, blood pressure was 90/60 mm of hg.

Emergency ultrasound was done and revealed huge intra peritoneal fluid with complex lesion in

left para umbilical region. Blood biochemistry and hematology report showed hemoglobin 10.5 gm/dl, WBC- TC was 9.99×10⁹/L, platelet count was 83x 10⁹/L, blood group was B positive, blood urea, serum electrolyte and coagulation profile were within normal limits.

After admission, she was counselled about the diagnosis and plan of management. All the possible complications were discussed with the patient. Written consent was taken and the patient was prepared for emergency surgery. A laparotomy was planned. The general surgeon kept informed. Adequate blood and blood products were kept ready.

A laparotomy with midline vertical incision was performed on 4th February 2024 at 4.15 pm. After opening the abdomen huge blood was found in the peritoneal cavity which was sucked out, peritoneal washing was given with normal saline. Uterus, both fallopian tubes and ovaries found normal. Ectopic sac was implanted on the side of the transverse colon which was dissected carefully. The omentum had hemorrhagic areas which were secured with additional sutures and cautery. The bowel, others intra-abdominal organs, ureters were all thoroughly examined; no damage or bleeding anywhere was detected, thorough warm saline wash given. An intraperitoneal drain was left and abdomen closed in layers. Intraoperative blood loss was estimated to be around 700 ml. Sac was sent for histopathology.

Post operatively she had a smooth, uneventful recovery. An ultrasound was repeated on the 3rd day which showed a normal pelvi-abdominal cavity and no intraperitoneal collection. She was discharged home on the fourth day with a follow up appointment in 4 weeks with histopathology report.

Photographs showing Ectopic scar adherent to the side wall of the transverse colon.

Discussion

Early abdominal pregnancy is one that presents at or before 20 weeks of gestation. Abdominal pregnancy can also be classified as primary or secondary depending on the implantation site.

PRIMARY ABDOMINAL PREGNANCY: This form is exceptional, the fertilized ovum implants directly on the peritoneal surface. The diagnosis is based on the following criteria defined by studdiford: normal fallopian tube and ovaries, absence of retroperitoneal fistula, and pregnancy that is attached only to the peritoneal surface and is diagnosed early (less than 12 weeks of amenorrhea), excluding the possibility of secondary abdominal pregnancy. The implantation site is variable, it can be pelvic (rectouterine pouch, fundus or posterior side of the uterus), abdominal (diaphragm, liver, spleen, omentum) or even retroperitoneal.

SECONDARY ABDOMINAL PREGNANCY: Is the most common form. It can result from tubal rupture or from a tubo-abdominal abortion .It can also be a consequence of an intrauterine pregnancy after a rupture of a hysterotomy scar, or a uterine perforation or a rupture of rudimentary horn.[4]

Abdominal pregnancy can be classified as early or late based on the gestational age at which they present. The clinical presentation is extremely variable and the diagnosis of early abdominal ectopic pregnancy (EAP) is complex. As there are no pathognomonic symptoms of abdominal pregnancy that distinguish it from tubal pregnancy, it requires a high index of suspicion. It is not uncommon to diagnose EAP for the first time at laparotomy or laparoscopy performed for tubal ectopic pregnancy, and on occasion more than one laparotomy/laparoscopy may be required before the diagnosis is eventually made. A suboptimal increase in serial human chorionic gonadotrophin (b-hCG) titres is not sufficient to make the diagnosis of any ectopic pregnancy, including EAP. The tool of choice for diagnosis is ultrasound, but distinguishing an EAP from other variants of ectopic pregnancy remains difficult. Only 50% accuracy can be expected for the diagnosis of EAP when ultrasound is used along with clinical evaluation. Ultrasound features to aid diagnosis of EAP were suggested by Allibone et al. These include, a) demonstration of a fetus in a gestational sac outside the uterus, or the depiction of an abdominal or pelvic mass identifiable as the uterus separate from the fetus, b) failure to see a uterine wall between the fetus and urinary bladder, c) recognition of a close approximation of the fetus to the material abdominal wall and, d) localization of the placenta outside the confines of the uterine cavity. As with all types of ectopic pregnancy, medical management of abdominal pregnancy has been reported. Agents used to treat these ectopic pregnancies include methotrexate (systemic and local), local instillation of potassium chloride, hyperosmolar glucose, prostaglandins, danazol, etoposide and mifepristone. Medical management is commonly used where potential life-threatening bleeding is anticipated, such as EAP of the liver and spleen. Even where medical management is used, it is important that patients are kept under surveillance as it is not uncommon for them to still require surgery because of hemorrhage. Angiographic arterial embolization can be used as first line treatment of EAP with the aim of avoiding surgery. Embolization of feeding vessels preoperatively will facilitate complete removal of an abdominal pregnancy.[5] Current concept on management of abdominal pregnancy support immediate active surgical intervention with termination of the pregnancy if diagnosed before 24 weeks gestation. In patients who present after 24 weeks, the appropriateness of conservative management is debatable. There is need to assess each individual case and adopt the most appropriate method with a view to limiting materno-foetal morbidity and mortality. A conservative approach requires

close surveillance of the patient and regular monitoring using Ultrasonography. The patient should be admitted into hospital where blood bank facilities and resources needed for rapid surgical intervention are obtainable. Intra-operative management of the placenta poses another dilemma for the clinician. Although removal of the placenta offers a better prognosis, this should not be attempted if there is any risk of massive hemorrhage with a fatal outcome. Placentas left in-situ usually regress gradually and are monitored with serial serum β-hCG estimation and Ultrasonography. The prophylactic use of methotrexate in placenta management is no longer advocated by some clinicians. In their view, the necrosed placental tissue is a potent culture medium with increased risk of serious intraperitoneal infection.[6] Abdominal pregnancy with live fetus is an extremely rare condition and requires a high index of suspicion.[7] At early gestations, it can be challenging to render the diagnosis, and it can be misdiagnosed as a tubal ectopic pregnancy.[8]

Conclusion

EAP is rare, and successful management depends on a high index of suspicion. While ultrasound and serial human chorionic gonadotrophin may help in the diagnosis, there is no single diagnostic tool available. At laparoscopy it is important that if an ectopic pregnancy is not visualized in the usual locations, then the entire abdominal cavity is inspected to include all abdominal organs. If the diagnosis is still not confirmed then MRI or intra-operative ultrasound may assist in diagnosis. Given the benefits of operative laparoscopy and increasing use of this modality for treatment, an initial laparoscopic approach may be appropriate to evaluate the size of the EAP, the organs to which it is attached relative vascularity, to decide further management. Teamwork, a multidisciplinary approach and expert opinion cannot be overemphasized to ensure successful management of the cases.

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Highlights

- The clinical presentation of early abdominal pregnancy is similar to that of tubal ectopic pregnancy in the majority of cases.
- Surgical laparoscopy must be the first choice in management of early abdominal pregnancy.
- Medical treatment should be reserved when a surgical intervention is deemed to be potentially severely hemorrhagic.

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