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Antibiotic Resistance: Battling the Invisible Threat

Miah MNA¹, Alam AFMS²

Antibiotic resistance is the ability of the microorganism to withstand the effects of the drug action. Antibiotic resistance initially appeared in hospitals where antibiotics were being used more but it has become epidemic at community level throughout the world.¹ Physicians of Bangladesh are also facing the challenges of antibiotic resistance.² Though bacteria may develop antibiotic resistance inherently but they generally acquired antibiotic resistance by genetic changes. By these genetic changes they not only develop resistance for itself but also transmit this resistance gene to their future generation. As a result resistance bacteria spread throughout the community.¹

The medical importance of antibiotic resistance is widespread. Antibiotic resistance can cause significant danger and suffering for children and adults who have common infections, once easily treatable with antibiotics.³ If a microbe is resistant to many drugs, treating the infections it causes can become difficult or even impossible. Someone with an infection that is resistant to a certain medicine can pass that resistant infection to another person. In this way, a hard-to-treat illness can be spread from person to person. Several factors predispose to drug resistance like overuse of broad-spectrum antibiotics, incorrect diagnosis, improper use of antibiotics by patients and the use of antibiotics as livestock food additives for growth promotion.⁴

In a developing country like Bangladesh, Antimicrobial Resistance (AMR) has become an emerging issue which is aggravated by irrational use of antimicrobials in a largely unregulated pluralistic health system.^{4,5,6} Widespread use of antimicrobials in animals further contributes to resistance and their contamination of environment causes spread of resistance.⁷ The World Health Organization (WHO) launch a Global Action Plan (GAP) in 2015 based on a 'One Health' approach—emphasizing the interdependence of human health, animal health, and the environment.¹

Our journey towards preserving the effectiveness of antibiotics is fraught with obstacles. Understanding and overcoming these challenges is imperative for forging effective strategies to safeguard public health and ensure a future where antibiotics remain a cornerstone of medical care. Without concerted efforts to curb antibiotic misuse, invest in alternative therapies and strengthen surveillance, we risk entering an era where routine medical procedures become perilous and infectious diseases regain their status as formidable adversaries. Proactive measures today will determine whether we can navigate a future where antibiotics remain effective and safeguard human health.⁸

In the relentless battle against antibiotic resistance, time is not our ally. The overuse

and misuse of antibiotics have propelled us into a precarious era where once-conquerable infections are morphing into formidable adversaries. This editorial serves as a call to action, urging stakeholders across the globe to unite against this silent threat.

From healthcare practitioners to policymakers, researchers to the public, a collective effort is needed to reshape our approach to antibiotics, enforce stringent regulations, and invest in alternative solutions. The clock is ticking, and the choices we make today will determine the fate of our ability to combat infectious diseases tomorrow.

-
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ORIGINAL ARTICLE

Maternal And Fetal Morbidities Of Premature Rupture Of Membrane Among Pregnant Women In Secondary Referral Center At District Level Hospital Of Bangladesh: A Cross Sectional Study

Pervin R¹, Khan M², Gani T³, Rahman S⁴, Islam SM⁵

Abstract

Background and objective: Premature rupture of membrane is a public health problem in low-socioeconomic areas of Bangladesh and the most common complication of pregnancy. It contributes significantly to maternal and perinatal morbidity and mortality. The objective of this study to find out maternal and fetal morbidities in secondary referral center at district -level hospital in Bangladesh.

Method: This cross section descriptive study was conducted in the obstetrics and Gynecology department of 250 bedded General Hospital Tangail during the period of January 2024 to June 2024 among pregnant women who were admitted in patient department. Pregnant women with PROM between 28 to 40 weeks of gestation in a singleton pregnancy were included in this study. A total 127 pregnant women with PROM were enrolled in this study. Data was collected through a semi-structured questionnaire by random sampling. A detailed history-taking and clinical examination were performed. Close maternal and fetal monitoring was done up to discharge to detect maternal and fetal complications as well as morbidities.

Results: The mean age of respondents was 25.08±5.24 years, most of 92.12% were housewife, half of 51.97% were secondary level education, their mean monthly income was 14685.39±4297.45 taka, nearly two third were un booked and multigravida, 52.75% of respondents had gestational age in between 37 to 40 weeks; their mean gestational age was 36.32±2.62 weeks. The mean time interval between of rupture of membrane and delivery was 24.34±2.73 hours, 70.08% was vaginal delivery and 29.92% was caesarean section. The mean birth weight of the baby was 2.48±0.53 kg and the mean APGAR score at 5minutes was 7.29±1.06. The associated risk factor for PROM was found to be 63.78% idiopathic, 13.39% urinary tract infection, 11.81% vaginal infection, 9.45% had previous history of PROM and 1.57% had a history coitus and trauma. . Maternal morbidity rate was 22.30% including 8.66% puerperal pyrexia, 1.57% chorioamnionitis, 3.94% postpartum hemorrhage, 6.30% wound infection, 1.57% abruption of placenta and 0.79% retained product of conception. Neonatal morbidity was 35%, among them 22.05% had birth asphyxia, 3.15% neonatal jaundice, 2.36% had TTN, 4.73% had septicemia, 2.36% had convulsion and 65.35% had no morbidity. About one third (38.58%) of neonate had a low birth weight and 61.42% had normal birth weight. One fourth (26.77%) neonate were admitted in NICU and neonatal mortality was 3.94% due to septicemia, convulsions and complications of low birth weight.

Conclusions: Proper and regular antenatal care, early identification of risk factors and their active management can reduce premature rupture of membranes and prevent their complications and morbidities in mother and fetus.

Keywords: Premature rupture of membrane, maternal and fetal morbidity

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Introduction:

Premature rupture of membranes common problem in pregnancy and it adversely affects the condition of mother and fetus. Intact fetal membranes prevent ascending uterine infection and give mechanical protection to the fetus in utero. Membrane rupture is an integral part of birth process¹. If rupture of membrane occurs any time before the onset of Labor, it is considered premature rupture of membrane. When rupture of membrane occurs beyond 37 weeks it is called term PROM; when it occurs before 37 completed weeks it is called preterm PROM; and when rupture of membrane persists for more than 24 hours before the onset of labor, it is considered prolonged PROM². When PROM occur <24 weeks it is considered as previable premature rupture of the membrane. The incidence of PROM ranges from about 5-10% of all pregnancies, and preterm PROM occurs in approximately 3% of all pregnancies. About 70% of PROM occurs in pregnancy at term, but in referral centers, more than 50% of cases may occur in preterm pregnancies. PROM is the cause of about one third of all preterm birth³.

In majority, the causes are not known. However, previously conducted studies reported factors that increase the risk of PROM, such as previous history of PROM, H/O sexually transmitted infection, low socioeconomic status, polyhydramnios, multiple pregnancies, infection including chorioamnionitis, urinary tract infection, bleeding in the 2nd and 3rd trimesters, and some procedures like cervical cerclage, amniocentesis and smoking^{4,5,6}. The burden of PROM ranges from maternal neonatal morbidity and mortality to national economic loss due to drug expense, hospitalization, absence from the workplace and expense to health professionals⁷. Premature rupture of membranes results in

maternal and neonatal risks as well as morbidities. The reported maternal morbidities are chorioamnionitis (15-25%), endometritis (2-29%), abruptio placenta (4-12%) and postpartum hemorrhage. Although occurs infrequently, maternal sepsis (0.8%) and maternal death (0.14%) due to infection^{3,8}. Fetal morbidities include infection and fetal distress due to umbilical cord compression and placental abruption, low birth weight, prematurity and its consequences, including respiratory distress syndrome (35%), sepsis, IVH, and necrotizing enterocolitis. Neuro-developmental Impairment CP and periventricular Leukomalacia have been linked to amnionitis. Chance of fetal demise due to umbilical cord accident^{3,8}. Pulmonary hypoplasia is a serious complication of PROM⁸.

Currently, there is no effective way of preventing of spontaneous rupture of membrane and its consequences. Prevention and prediction of PROM would offer the best opportunity to prevent its complications. The aim of this study is to find out Fetal and Maternal morbidities of PROM among pregnant women attending the inpatients department.

Materials and methods:

This cross-section descriptive study was conducted in the obstetrics and Gynecology department of 250 bedded General Hospital Tangail during the period of January 2024 to June 2024 among pregnant women who were admitted the inpatient department. Pregnant women with PROM between 28-40 weeks of gestation in a singleton pregnancy were included in this study. Complications of pregnancy other than PROM that affect fetal and neonatal outcome like multiple pregnancies, growth

restriction, uterine anomalies, fetal anomalies, hypertensive disorder in pregnancy, gestational diabetes mellitus, antepartum hemorrhage and medical disorder of pregnancy were excluded from this study. The sample size was calculated by using the formula; $n = Z^2 \times \frac{p \times q}{e^2}$, n=minimum required sample size, Z=1.5 at 95% Confidence Interval (CI), P=prevalence, q=1-p, e=margin of error, 5

A total of 127 pregnant women with PROM were enrolled in this study. Data was collected through a semi structure questioner by random sampling. Initially, each Woman with PROM admitted to the labor room for a complete maternal and fetal work up. A detailed history taking and clinical examinations were performed. The diagnosis of PROM was done by history of passage of gush of fluid through vagina and gentle sterile per speculum examination showing pooling of fluid in posterior fornix. Baseline ultrasonography assess fetal growth, placental maturation and amniotic fluid volume. Observe the patient in labor room for 24 hours and transfer the patient into the ward for those who were not initiated labor pain.

Conservative management was given for those were <34 weeks of gestation until spontaneous labor or until maternal and fetal indication for eminent delivery such as chorioamnionitis, meconium stain amniotic fluid, abruption, cord prolapse, or fetal distress. PROM with >34 weeks were waiting for 24 hours for spontaneous labor, those who did not spontaneously labor, they were induced. Prophylactic antibiotic was given to all patients and dexamethasone was given 6mg 12hourly for 4dose if gestational age <34 weeks. Close maternal and fetal monitoring was done up to discharge to detect maternal and fetal complication as well as morbidities. Mothers were

monitored and detected chorioamnionitis, PPH, retained placenta and Abruptio. Newborns were closely monitored for evidence of neonatal sepsis, respiratory distress syndrome, necrotizing enterocolitis and so on. Neonates with poor APGAR score, prematurity or infection were admitted to the NICU.

The Data were tabulated and expressed as mean $\pm$ SD, frequency, and percentage. One sample student's t-test was performed. All statistical calculations were performed using SPSS Version 23.

Results:

This study was carried out at the 250 Bedded general hospital in Tangail, which was a district level hospital and secondary referral center in Bangladesh. During the study period, 3295 pregnant women were admitted to the obstetrics ward. A total 127 patients were enrolled in this study who met the selection criteria.

Table-I shows the demographic characteristics of respondents. The mean age of the respondents was 25.08 ± 5.24 years and ranged between 18 to 40 years. Among respondents 28.34% (36) belong to the 15-20 years age group, 31.47% (40) were 21-25 years, 28.34% (36) were 26-30 years, 7.04% (6) were 31-35 years, and 4.72% (6) were more than 35 years. Most of 92.12% (117) were housewives, 3.93% (5) were service holder, and 3.93% (5) were doing business.

Regarding educational status, 8.67% (11) were illiterate, 22.04% (28) had primary level, half of 51.97% (66) had secondary level, 9.45% (12) had higher secondary, and 7.87% (10) had graduated. About two thirds 71.65% (91) of respondents were middle class, with a monthly income within 1100-20000 taka, 23.83% (29) were lower class,

with a monthly income of 5000-11000 taka, and 5.51% (7) were upper middle class,

with a monthly income of 21000-25000 taka.

Table I: Sociodemographic characteristic of respondents. (n=127)

Variables	Frequency(f)	Percentage (%)
Age		
15-20	20	15.75%
21-25	62	48.82%
26-30	30	23.62%
31-35	09	7.08%
35>	06	4.73%
Mean $\pm$ SD	25.08 $\pm$ 5.24	
Occupation		
Housewife	117	92.14%
Service	5	3.93%
Business	5	3.93%
Education level		
Illiterate	11	8.67%
Primary	28	22.04%
Secondary	66	51.97%
Higher Secondary	12	9.45%
Graduate	10	7.87%
Socioeconomic status		
Low (5000-10000)/Month	29	22.84%
Middle (11000-20000)/Month	91	71.65%
Upper middle (21000-25000)/Month	7	5.51%
Mean $\pm$ SD	14685.39 $\pm$ 4297.45	

Table-II Shows the distribution of respondents according to obstetrics characteristics. About two thirds 66.93% (85) of respondents were un booked, and one third 33.07% (42) were booked. Primigravida were 33.86% (43) multigravida were 66.14% (84) and the

mean gravida was 2.015 $\pm$.87. About half 52.75% (67) of respondents were 37-42weeks of gestation, 42.53% (54) were 31-36 of gestation and 4.72% (6) were 25-30 weeks of gestation. The mean gestational age was 36.32 $\pm$ 2.62 weeks.

Table II: Distribution of respondents according to Obstetrics characteristic. (n=127)

Variable	Frequency (f)	Percentage (%)
Booking Status		
Booked	42	33.07%
Un booked	85	66.93%
Parity		
Primigravida	43	33.86%
Multigravida	84	66.14%
Mean $\pm$ SD	2.015 $\pm$.87	
Gestational age		
25-30 (weeks)	6	4.72%
31-36 (weeks)	54	42.53%
37-40 (weeks)	67	52.75%
Mean $\pm$ SD	36.32 $\pm$ 2.62	

Table-III Shows distribution of respondents according to delivery characteristics. Two third 75.59% (96) of respondent time intervals for rupture of membrane and delivery were within 0-24hours, 25.20% (26) were within 25-72hours and 3.93% (5) were more than 72 hours. The mean time interval between rupture of membrane and delivery was 24.34 $\pm$ 25.82 hours. Among respondents nearly three fourth 70.08% (89) were delivered by vaginally, and 29.92% (38) were delivered by caesarean section. More than half 61.42% (78) of respondent fetal birth weight were >2.5kg (normal weight), 22.05% (44) fetal birth weight within >1.5-<2.5kg and 3.93% (05) were within >1.0-<1.5kg. The mean birth weight 2.48 $\pm$ 0.53kg. More than three fourth

77.95% (99) of respondents fetal APGAR score at 5 minutes were 7-10(normal), 22.05% (28) were 5-6(mild birth asphyxia) and none of score 0-4. The mean APGAR score was 7.2 $\pm$ 1.1.

Figure I: Shows distribution of respondents according to risk factors. About two third 63.78% (81) of respondents were idiopathic, 13.39% (17) were associated with urinary tract infection, 11.81% (15) were associated with vaginal infection, 9.45% (12) were associated with previous history of PROM and 1.57% (2) were associated with a history of coitus & trauma.

Table III: Distribution of respondents according to Delivery characteristics. (n=127)

Characteristics	Frequency (f)	Percentage (%)
Time interval of rupture of membrane and delivery		
0-24 hours	96	75.59%
25-48	20	15.75%
49-72 hours	6	4.73%
>72 hours	5	3.93%
Mean $\pm$ SD	24.34 $\pm$ 2.73	
Mode of delivery		
Vaginal delivery	89	70.08%
Caesarean section	38	29.92%
Birth weight		
>1.0kg-<1.5kg (very LBW)	05	3.93%
>1.5kg-<2.5kg (LBW)	44	34.65%
>2.5kg Above (normal BW)	78	61.42%
Mean $\pm$ SD	2.48 $\pm$.53	
APGAR Score/ 5Min.		
0-2 Severe birth asphyxia	00	00%
3-4 moderate birth asphyxia	00	00%
5-6 Mild birth asphyxia	28	22.05%
7-10 Normal	99	77.95%
Mean $\pm$ SD	7.29 $\pm$ 1.06	

Figure I: Distribution of respondents according risk factors. (n=127)

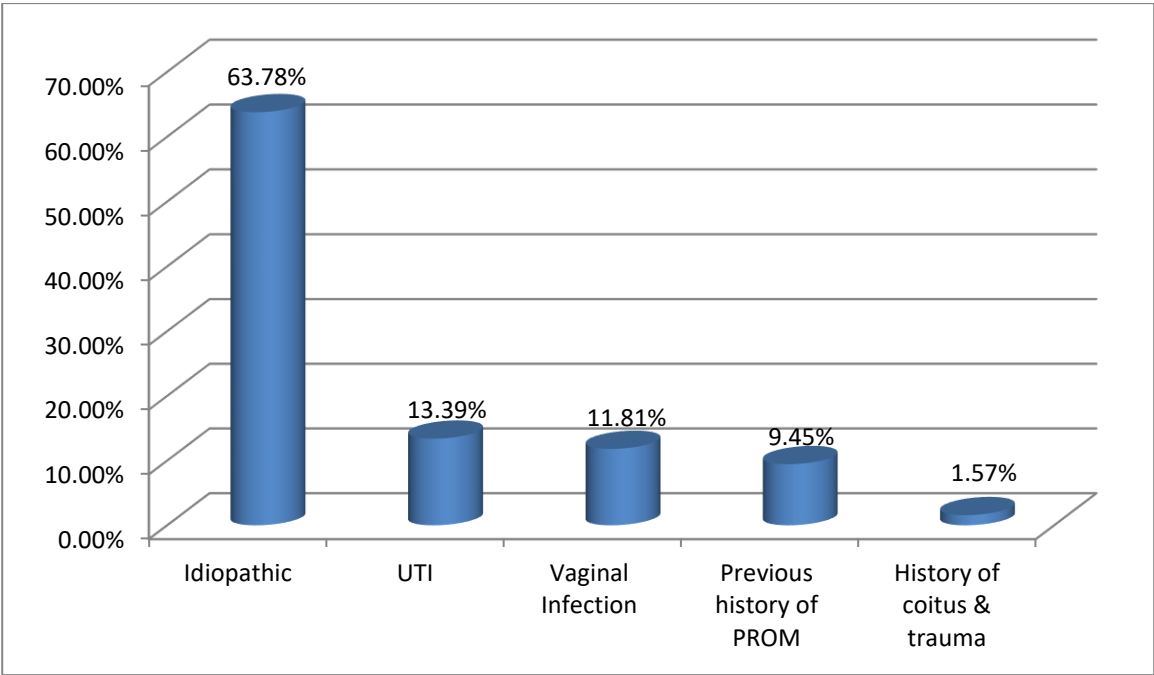


Figure 2: Distribution of maternal morbidities. (n=127)

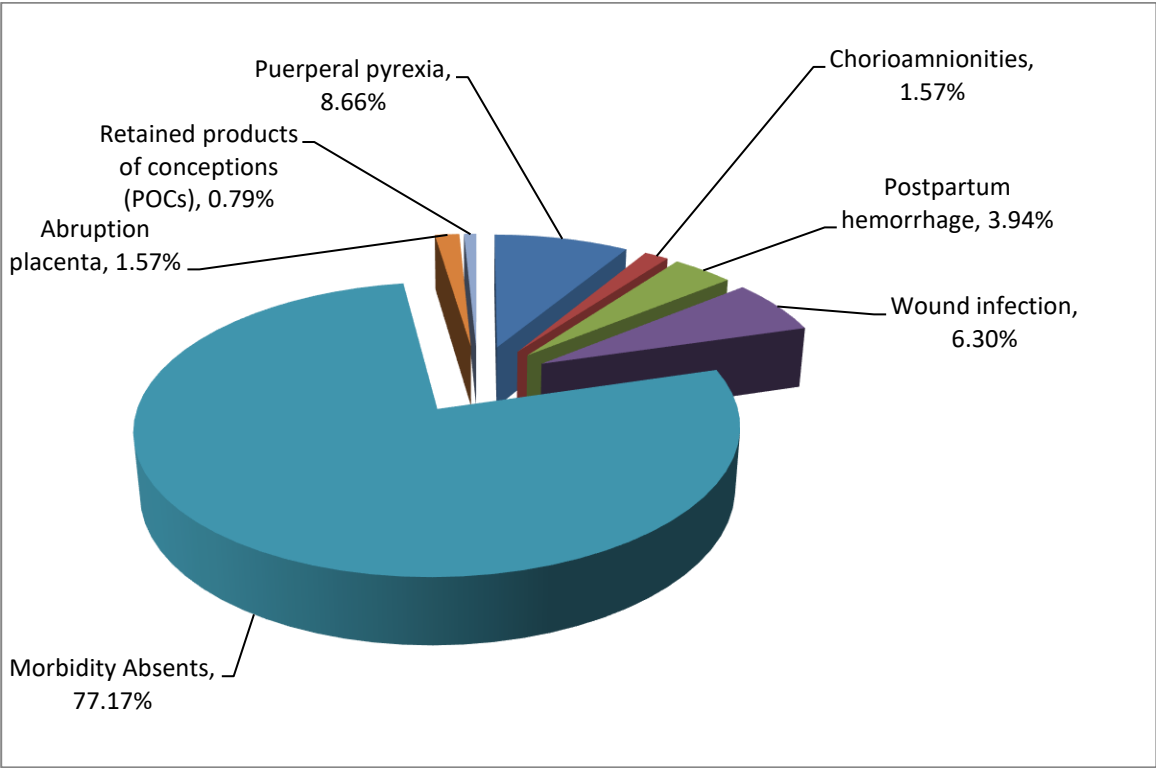


Figure 2: Shows the distribution of maternal morbidities. Among the respondents 77,7% (98) had no morbidities but remaining, 8.66% (11) had developed puerperal pyrexia, 1.57% (2) had chorioamnionities, 3.94% (5) had developed postpartum hemorrhage, 6.30% (8) had wound infection, 1.57% (2) developed abruption placenta and 0.79% (1) had retained product of conception.

Table-IV Shows neonatal morbidities, 22.05% (28) neonates developed birth asphyxia, 3.15% (4) neonates developed neonatal jaundice, 2.36% (3) developed TTN, 4.73% (6) developed septicemia, 2.36% (3) developed convulsion and 65.35% (83) neonate had no morbidities. Among neonates 38.58% (49) had a low birth weight, 61.42% (78) had a normal birth weight. 26.77% (34) neonate was admitted to the NICU and neonatal mortality was 3.94% (5)

Table IV: Distribution of neonatal morbidities. (n=127)

Variable	Frequency (f)	Percentage (%)	Total
Birth Asphyxia	28	22.05%	100%
Neonatal Jaundice	4	3.15%	
TTN	3	2.36%	
Septicemia	6	4.73%	
Convulsion	3	2.36%	
Morbidity Absents	83	65.35%	
Birth Weight			
Low birth weight	49	38.58%	100%
Normal birth weight	78	61.42%	
Neonatal intensive care unit Admission			
Yes	34	26.77%	100%
No	93	73.23%	
Neonatal mortality			
Yes	5	3.94%	100%
No	122	96.06%	

Discussion:

PROM is still a big burden in our country as well as challenge for obstetricians and neonatologists. Though the exact cause is not known, but it causes significant maternal and perinatal morbidity and mortality. In our study, about 48.86% (62) of respondents were belonged to the 21-25 age group, where the mean age was 25.08 ± 5.24 years. Study of most. Sabina Yeasmin et al⁹ reported that 53% were in the age group 20-24 years, which is similar to our study.

The majority of 92.12% (117) respondents were housewives, which is higher than the study by Dr. Monowara et al¹⁰, which showed 62% were housewives. In our country, majority of people live in rural areas and the majority are housewives. About half 51.97% (66) of respondents education level was secondary-level education which is similar to Assefa.N.E.et.al¹. In our country, compulsory primary-level education and unpaid education are available up to class eight. The majority 71.65% (91) of respondents had monthly income within 11000-2000taka and the mean monthly income had 14685 ± 4297.45 taka compared to Salma akter jahan et al¹¹ study which had 46% population monthly income 4000-8000 taka and majority came from lower and middle- class family. Socioeconomic status indirectly influences premature rupture of membranes. Another study S Mohan¹² and S Pandey¹³ reported low and middle socioeconomic status were 55.2%, 29.6% and 61% and 39% respectively.

The present study showed two third 66.14% (84) of respondents were un booked who had no antenatal checkup and one third were booked, which is similar to study Tripti N et al¹⁴, which found 69.3% were un booked and 30.7% were booked.

Another study, Shah M¹⁵ observed 76% unbooked and 24% booked, they support proper antenatal care can improve fetal and maternal outcome by detecting and managing obstetric complications earlier. we observed that PROM was higher in multigravida 66.14% (84) than primigravida 33.86% (43), which is similar with S Mohan et al¹² study of 61.1% multigravida and 38.9% primigravida. Our study suggested that multigravida acts as a risk factor for PROM. Also, S Akter et al¹⁶ showed PROM were common in multiparity. About half 52.75% (67) of respondents gestational age had 37-42 weeks gestation, 42.53% (54) had 31-36 weeks gestation, 4.72% (6) had 25-30 weeks gestation, and mean gestational age was 36.53 ± 2.62 , which is similar to the study Salma akter et al, Biswas T, et al, Lovereen s, et al.^{11,17,18}. The chance of PROM is higher with increased gestational age.

The current study, three fourth 75.59% (96) of respondent time interval rupture of membrane and delivery within 0-24 hours, 25.20% (26) were within 25-72 hours, 3.93% (5) more than 72 hours and the mean time interval rupture of membrane and delivery was 24.34 ± 2.73 hours. A Study by Sultana F and Karmokar¹⁹ reported a mean time interval and delivery was 27.60 ± 21 . Neha Sing²⁰ observed that 74.66% of women delivered within 24 hours, which is similar to our study. It is concluded that the majority of respondents rupture of membrane and delivered within 24 hours. Vaginal delivery, including spontaneous and induced, occurred in 70.08% (89) of respondents and caesarean section occurred in 29.92% (38) of respondents due to failure to progress and fetal distress. S Mohoan¹² reported 77.5% vaginal delivery and 22.5% caesarean section, which is similar to our study. Other study also found

similar observations regarding vaginal delivery²¹. Regarding birth weight of fetus 61.24% (78) had >2.5 kg and above, 34.65% (44) had <2.5 -> 1.5 kg and 3.93% (5) had <1.5 -> 1kg. Tripti Nagaria¹⁴ found in study group 46.1% fetal birth weight >2.5-3kg, 30.2% fetal birth weight 2-2.5kg, 18.3% fetal birth weight <2kg and in control group 55.5% had >2.5-3kg, 19.2% had 2-2.5kg, and 0.9% had <2kg fetal birth weight. Majority of fetal APGAR score was 7-10 at 5 minutes and 22.05% (28) was 5-6 at 5 minutes compared with study of Tripti Nagaria¹⁴ observed in majority cases high APGAR score.

We observed in this study that 63.78% (81) causes of PROM were idiopathic, 13.39% (17) were UTIs, 11.81% (15) vaginal infections, 9.45% (12) had a previous history of PROM and 1.57% (2) occurred due to history of coitus and trauma. A Study by Mishra et al²² observed 54% unknown, 28% previous history of PROM, and 18% UTI. Yam Prasad Daw²³ reported previous history PROM 7.145% (4), sexual intercourse 10.71% (6), abnormal vaginal discharge (genital) 3.57% (2). Lawan ZM²⁴ showed that previous history of PROM, low socioeconomic status and genitourinary infection were highly predictive of PROM. In this study maternal morbidity in PROM 22.30% including 8.66% (11) were puerperal pyrexia, 1.57% (2) chorioamnionitis, 3.94% (5) postpartum Haemorrhage, 6.30% (8) wound infection, 1.52% (2) abruptio placenta, 0.79% (1) retained product of conception and 77.7% (98) had no maternal mortality which were consistent with the study of Loveren et al¹⁸. Doggima et al²⁵ reported in their studies, morbidities were postpartum endometritis and retained placenta. Saker¹⁶ reported maternal mortality 32% where 14% chorioamnionitis, 4% endometritis, 10% puerperal sepsis, 2% abruptio placenta, 2% wound

infection, which were some disparity with our study because we did the study at secondary level hospital where facilities are limited compared to tertiary level hospital. Use of prophylactic antibiotics in PROM reduce maternal morbidity. However, despite the fact, prophylactic antibiotic used liberally in all cases in this study. With expectant management of PPRM, the most common complication is chorioamnionitis, which increases with the duration of PPRM and decreases with the advancing age of pregnancy²⁶. Fetal morbidity after preterm PROM results from maternal intrauterine infection, umbilical cord compression, placental abruption, and prolonged fetal compression is caused by oligohydramnios. In each of these places, the fetus is at increased risk of fetal death (generally approximately 1% with conservative management after the limit of potential neonatal viability) and perinatal asphyxia²⁷. Saria Dars²⁸ revealed prematurity in 5 cases, fetal distress in 4 cases, cord compression in 5 cases, necrotizing enterocolitis in 2 cases, hypoxia in 9 cases, and pulmonary hypoplasia in 2 cases, among 27 cases of PPRM. In our study neonatal morbidity was 35%, among them 22.05% (28) had birth asphyxia, 3.15% (4) had developed neonatal jaundice, 2.23% (3) had developed TTN, 4.73% (6) had developed septicemia, 2.36% (6) had developed convulsion. Among neonates 38.58% (49) had a low birth weight, 61.42% (78) had a normal weight. Admission to the neonatal intensive care unit 26.77% (34), and 73.23% (93) were not admitted in NICU. Neonatal death was 3.94% (5) due to complication of septicemia, convulsion and birth asphyxia. Neha Singh reported NICU admission were noted to be significantly higher in the early PPRM group. Harding et al²⁹ revealed that use of steroid in PPRM before 34 weeks reduces perinatal

mortality and morbidity by decreasing respiratory distress syndrome and necrotizing enterocolitis. In this study we used steroid in all case of PPRM and this may be responsible for low incidence of RDS.

Limitations: This study was conducted in a single center study, sample size not larger scale, and the follow-up period was short. This study did not reflect over all situation of Bangladesh.

Conclusions:

We concluded that PROM is associated with significant maternal and fetal morbidity. In this study, more than half of causes of PROM were idiopathic but some risk factors included urinary tract infection, vaginal infection, previous history of PROM and history of coitus and trauma related to PROM. This study revealed maternal morbidities: puerperal pyrexia, chorioamnionitis, postpartum hemorrhage, wound infection, abruptio placenta, retained product of conception, and neonatal morbidities: birth asphyxia, neonatal jaundice, TTN, septicemia, convulsion and low birth weight. One fourth of neonates were admitted to NICU. Proper and regular antenatal care, early identification of risk factors, and their active management can reduce premature rupture of membranes and prevent their complications and morbidities in mother and fetus.

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Original Article**A Retrospective Study Of Deaths Due To Suicidal Hanging During Pre-Covid-19 And The Impact Of The Covid-19 Pandemic Among The Victims In Tangail District, Bangladesh****Khan RH¹, Sultana P², Biswas M³, Debnath J⁴, Uddin MJ⁵, Mostary S⁶****Abstract:**

Background and objectives: Suicide by hanging is the most prevalent means of suicide worldwide, particularly among young people, and reveals the state of mental health in certain indigenous populations. The effects of the COVID-19 pandemic are not limited to health, but also have a major impact on the social and economic aspects. Many small and medium-sized businesses are being disrupted and many persons become unemployed. So, many people become mentally fragile which leads to mental illness including suicide. The main objective of this study was to describe the socioeconomic and demographic profiles of hanging victims in Tangail, Bangladesh.

Methods: A retrospective descriptive study was performed using data collected from 250 bedded Tangail general hospital morgue from July 2019 to December 2019 (Pre-Covid 19) and May 2020 to October 2020 (Covid-19) during the period of autopsies of the dead bodies who came with death due to hanging.

Results: A total of 178 cases of deaths due to suicidal hanging were included in this study from July 2019 to December 2019 (pre-Covid-19) and May 2020 to October 2020 (Covid-19), two cohorts. Among 178 victims, the suicide rate of females was higher. The commonest age group involved in suicidal hanging deaths was 21-30 years. Regarding the employment status of victims, the unemployed were the highest number 79 (41.7%). The incidence of suicidal hanging has increased in unemployed persons during the Covid 19 due to the impact of the global pandemic situation. The study concludes that there was a slight increase in suicide rates in the study population during the Covid-19 pandemic.

Conclusion: Hanging was observed as a frequently used method of suicide in Bangladesh. Implementing cost-effective mental health strategies, and social & community awareness to decrease suicidal incidence for risky individuals is highly suggested.

Keywords:

Covid-19 pandemic, Hanging, Suicide, Autopsy, Postmortem, Asphyxia.

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Received: 12th January, 2024**Accepted:** 1st March, 2024**Introduction:**

The COVID-19 pandemic is a global challenge that is not just limited to the

physical consequences but also a significant degree of mental health crisis including irritability, reduced consciousness (associated with seizures), depressive

mood, confusion, sleep problems, anxiety disorders, severe and rare neurological complications like brain inflammation, strokes, delirium and nerve damage, etc. as reported by the WHO¹. Self-harm and suicide are its extreme effects. This reflects those individuals with Covid-19 are at higher risk of mental health problems². Suicide is a serious public health concern and a leading cause of death worldwide³. Suicidal hanging is the most prevalent means of suicide worldwide, particularly among young people, and reveals the state of mental health in certain indigenous populations. The Covid-19 pandemic was seen as related to rising rates of suicide fatalities⁴. Hanging is that form of asphyxia that is caused by the suspension of the body by a ligature which encircles the neck, the constricting force being the weight of the body⁵. Hanging is always suicidal unless otherwise proven. It is a form of violent asphyxial death. It produces painless death for the victims so it is a widely practiced method of suicide. Causes of death due to hanging include asphyxia &/or venous congestion, cerebral ischemia, shock, fracture, or dislocation of the cervical vertebrae⁶.

It is estimated by the WHO that there are at least 20 suicide attempts for every successful suicide completion. Yearly, about 800,000 deaths are reported due to suicide, which accounts for 1.4% of all deaths globally⁷. However, there is a significant link between suicide rate increment and stressful life events like viral outbreaks. Evidently, during and aftermath of the viral outbreaks (eg, the 1918 influenza outbreak, the 2003 SARS epidemic, etc.), the suicide rate is reportedly exacerbated. For instance, the elderly suicide rate increased during the 2003 SARS epidemic in Hong Kong in 2003 and 2004, which was not suppressed to the level of the 2002 suicide rate⁸. Several studies

forecasted the Covid-19 pandemic's impact on suicide rate increment based on rising unemployment rates⁹. These conditions cause a high economic crisis. So, mental health issues can facilitate suicidal behaviors among some individuals. Our study aims to clarify the issue of the incidence of suicides during the Covid-19 pandemic at a district level in Bangladesh.

Materials and methods:

This is a retrospective descriptive study. The data was retrieved from post-mortem records available at 250 bedded Tangail general hospital morgue. The cases of suicide hangings autopsied from July 2019 to December 2019 (pre-Covid-19) and May 2020 to October 2020 (Covid-19) were divided into two cohorts. A total of 178 were carried out into two cohorts during autopsy. Various data were collected. In this study incidence of hanging deaths, its relationship with the sex and age of the deceased and employment status during pre-Covid-19 and Covid-19 were studied on autopsy.

Result:

A total of 413 autopsies were conducted during pre-Covid-19 and Covid-19 from July 2019 to December 2019 (pre-Covid-19) and May 2020 to October 2020 (Covid-19) in the mortuary of 250 bedded Tangail general hospital, out of which 178 cases were of hanging deaths.

During the pre-Covid-19 period, the male-female gender-wise distribution is 36.8%, 63.2% and in the Covid-19 period 36.2%, 63.8%. The incidence rate of deaths due to suicidal hangings during the pre-Covid-19 and the Covid-19 pandemic was 76/180 (42.2 %) and 102/233 (43.8 %) respectively

[total hanging cases divided by the total number of autopsies]. The Chi-Square test revealed a significant P value of 0.0001.

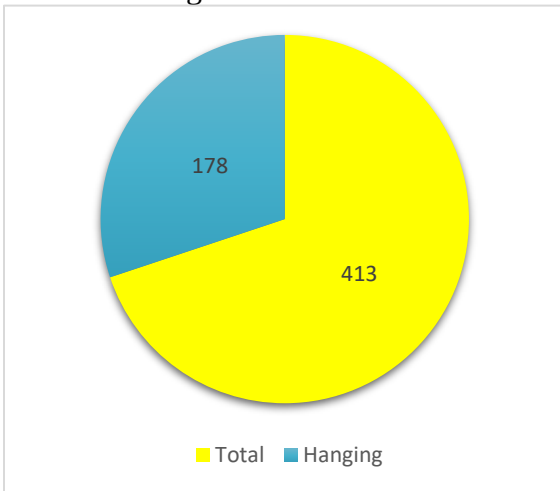


Fig-1: Incidence of autopsies

The monthly mean values of the cases during pre-Covid-19 were 12.67 and Covid-19 was 17.

For the pre-Covid-19 and the Covid-19 periods, the commonest age group involved in suicidal hanging deaths belonged to the age group of 21-30 years 36.8% and 35.2% respectively.

The incidence of suicidal hanging has increased in unemployed persons during the Covid 19 due to the impact of the global pandemic situation. During the pre-Covid 19 period, unemployment was the least in August 2019 (pre-Covid-19) and July 2020 (Covid-19).

An increase in the cases of suicidal hanging was seen in September, November, and December for the pre-Covid 19; and June, August & September for the Covid-19 periods. Frequency rate was 28% but the unemployment rate was 44% in the Covid-19 situation.

Table 1: Age distribution of hanging victims

Age group	Pre-Covid 19		Covid 19	
	Number	Percentage	Number	Percentage
11-20	21	27.6%	27	26.4%
21-30	28	36.8%	36	35.2%
31-40	12	15.7%	19	18.6%
41-50	4	5.2%	8	7.8%
51-60	6	7.9%	8	7.8%
61-70	4	5.2%	5	3.9%
71-80	1	1.3%	0	0%

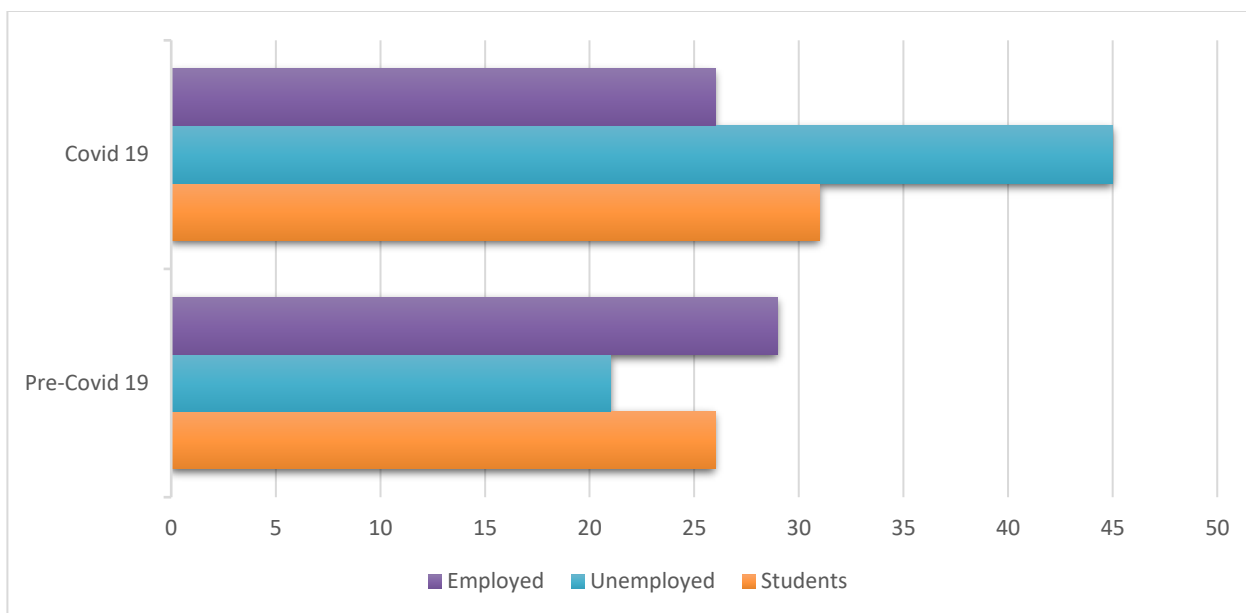


Fig-2: Employment status

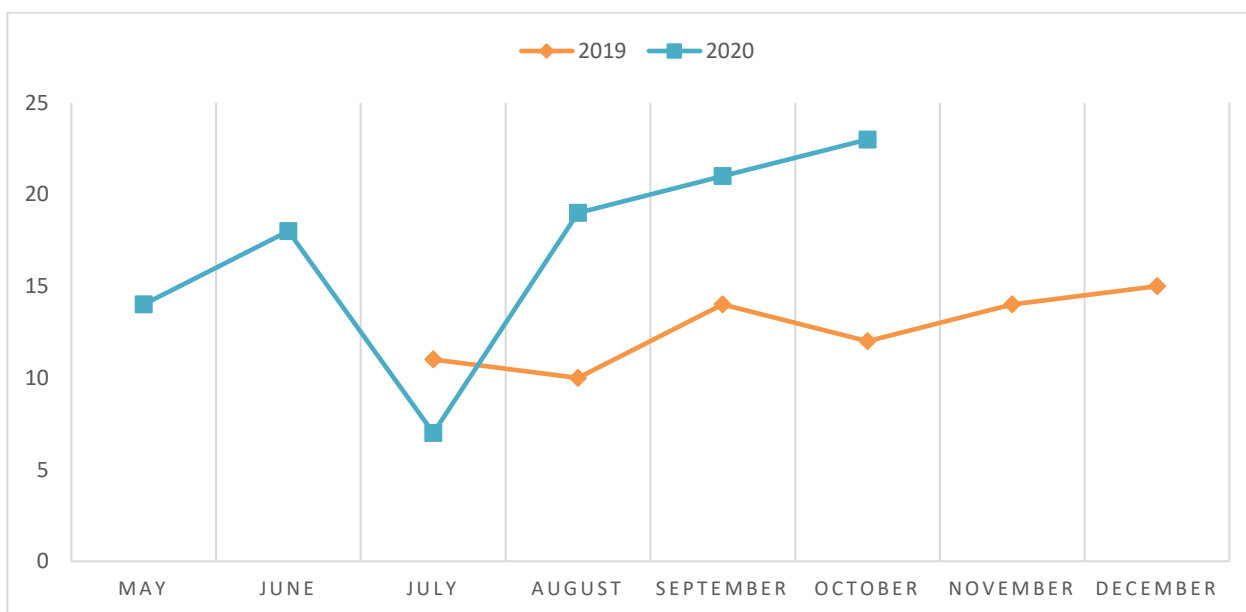


Fig-2: Distribution of cases during pre-covid-19 and covid-19 periods

Discussion:

The coronavirus-19 disease (COVID-19) pandemic is causing economic problems for those individuals whose livelihoods have been affected due to the lockdowns

occurring in many countries around the world including Bangladesh¹⁰. A significant minority of individuals live below the poverty line (i.e., 20% live below the poverty line and 10.5% live in extreme

poverty as reported in the 2018–2019 economic year; Financial Express¹¹. Additionally, (i) the country is also ranked as having the second most unemployed graduates among Asia-Pacific countries, based on the International Labour Organization (ILO) report; (ii) youth unemployment rates doubled between 2010 and 2017 (iii) the country has an unemployment rate of 4.4% among the general population¹². The sudden economic recession during Covid 19 has led needy individuals to contemplate suicide. Globally, it is well-established that unemployment, poverty, and economic distress are associated with suicide, and that when there are increases in these, there are increases in suicide^{13,14}. Therefore, the suicide-related cases that are reported here are not unexpected in the COVID-19 lockdown situation because of the economic instability and disruption throughout the country.

The WHO estimates showed that 77 % of the suicides in low and middle-income countries accounted for 1.3 % of all the deaths worldwide as the 17th leading cause for the year 2019¹⁵. The psychiatrists were intuited about the possibility of an increased rate of suicides due to the precipitation of the negativity cast by the Covid-19 pandemic upon the individuals living under conditions of occult or manifest stress¹⁶.

Hanging being the commonest method preferred to commit suicide was chosen to study the suicide rate during the Covid-19 pandemic. The maximum number of suicides seen in the age group of 21–30 years with no significant difference for the pre-Covid and the Covid-19 period. The incidence of 76/180 (42.2%) of suicidal hangings during the pre-Covid-19 got almost doubled to 102/233 (43.8%) during the 1st wave of the Covid-19 pandemic in this study.

According to UN Policy Brief on COVID-19 and mental health, although the COVID-19 crisis is, in the first instance, a physical health crisis, it has the seeds of a major mental health crisis. Specific population groups are showing high degrees of COVID-19-related psychological distress. Frontline healthcare workers and first responders have been exposed to numerous stressors. Emotional difficulties among children and adolescents are exacerbated by family stress, and social isolation, with some facing increased abuse, disrupted education and uncertainty about their futures, occurring at critical points in their emotional development. Before COVID-19 emerged, statistics on mental health conditions (including neurological and substance use disorders, suicide risk and associated psychosocial and intellectual disabilities) were already stark. Depression affects 264 million people in the world. Around half of all mental health conditions start by age 14, and suicide is the second leading cause of death in young people aged 15-29. More than 1 in 5 people living in settings affected by conflict have a mental health condition. People with severe mental conditions die 10-20 years earlier than the general population.

Of the socio-demographic factors, along with the study, the female gender is one of the risk factors of suicidal behavior, although they commit less suicide than males as per the WHO. Globally, twice times higher suicide rates were found in males (13.7 vs 7.5 per 100,000 population)¹⁷. The gender-based disparities in suicidal behavior and suicide can be attributed due to the diversities of their participating roles and responsibilities in society, social status as well as differences in social interaction due to their biological differences^{18,19}. However, other socio-demographic factors increasing suicidal behavior risk included being divorced or

widows or widowers or single in marital status^{20,21,22}, having a low level of education, being an urban resident²³, belonging to higher socio-economic status, being unemployed, having no children, etc. These individuals having no partner or children became lonelier as of the lockdown and social restrictions imposed, which are also reported to worsening psychological well-being, including occurring suicide outside Bangladesh²⁴. Thus, strategies related to online engagement with friends and relatives along with having access to telepsychiatry services are highly recommended.

Bangladesh had reported most of the suicide cases concerning economic-related issues. However, it is recommended that the suicide risky stressors should be focused on while taking mental well-being initiatives.

Conclusion:

Being a limited resource country, Bangladesh has the imperfect capability to fight the stressful situation turned by the COVID-19 pandemic, whereas a lack of initiatives was taken regarding mental health. In this regard, a systematic evaluation of the extreme mental health condition, suicide, is supposed to be worthy of help. The review on suicide during the COVID-19 pandemic in Bangladesh is anticipated to have implications for mental health policymaking and practice. Considering the present review findings, cost-effective mental health strategies with social and community awareness for increasing the suicide risky individuals' help-seeking behaviors are highly suggested.

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Original Article**A Comparative Study Of Posterior Approach Versus Lateral Approach For Hemiarthroplasty In Intra-Capsular Neck Of Femur Fractures**

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Abstract:

Background and Objective: To compare the functional outcome between posterior and lateral approaches for hemiarthroplasty in Intra-capsular Neck of Femur Fractures.

Methods: A total 24 patients of either sex, age between 55-80 years with intracapsular neck of femur fractures were operated with hemiarthroplasty. Patients were divided in two equal groups i.e. group A and B operated with posterior and lateral approach respectively. Functional outcomes were compared using Harris hip score and range of movements assessed clinically. Hip function and final outcome measures were noted and compared between two groups.

Results: The mean age of patients was 63.45 ± 6.48 years in group A and 64.70 ± 4.83 years in group B with female to male ratio was 1.5:1 for group A and 1.3:1 for group B. Operating time for group A and for group B was 67 and 72 minutes respectively. Mean intraoperative blood loss was 150 ml in group A and 140 ml in group B. Posterior approach carries an increased risk of prosthetic dislocation as compared to lateral approach. The most common complication in both the groups were infection, group A was 11.40% and in group B was 12.70%. There was no intraoperative mortality seen in follow up period.

Conclusion: The study showed that there was no significant difference between the two approaches for hemiarthroplasty in terms of mean operating time, hip pain, and functional outcomes

Keywords: Intracapsular neck femur fracture, Hemiarthroplasty, Posterior approach, Lateral approach, Harris hip score.

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Introduction:

Hip fractures are common and comprise about 20% of the operative workload of an orthopaedic trauma unit¹. Intra-capsular femoral neck fractures account for about 50% of all hip fractures. The lifetime risk of sustaining a hip fracture is high and lies within the range of 40% to 50% in women and 13% to 22% in men. The femoral neck of fracture is one of the most common fractures in the elderly. Younger patients are also frequently affected due to accidents. Hemiarthroplasty has many advantages since it allows the immediate return to daily activities and avoids bed rest complications. This procedure carries a relatively short duration of operation. Two different surgical approaches have predominated. In transgluteal direct lateral approach, as described by Hardinge in 1982², the anterior portion of the gluteus medius and minimus muscles is divided. The posterior approach, as described by Moore in 1957³, involves division of the piriformis, obturator internus muscle, and gemelli tendons. Each approach has advantages and a different spectrum of complications⁴. Previously conducted studies of hip fracture patients treated with hemiarthroplasty indicate that the posterior approach increases the risk of hip dislocation and reoperation compared to the lateral approach. Following hemiarthroplasty, several studies showed a lower dislocation rate after the lateral approach compared to the posterior approach. The lateral approach, however, may predispose to hematoma, rates of infection and perioperative fractures are similar after both approaches⁵⁻⁷.

The aim of this study was to perform a thorough evaluation of relevant early surgical complications in patients being treated with hemiarthroplasty after femoral

neck fracture, comparing the posterior approach to the lateral approach.

Materials and methods:

The prospective comparative study was done on 24 patients age between 55 to 80 years with intra-capsular neck of femur fractures treated with Hemiarthroplasty by posterior or lateral approach in the department of orthopedics, 250 bedded General Hospital, Tangail from January 2021 to December 2021. Study was started, after obtaining institutional ethical committee approval and written informed consent from all the patients. Those patients having painless hip before trauma, patients with no other associated hip pathology and patients who are fit and willing to go for surgery were included in the study. Exclusion criteria consisted of patients with pathological neck of femur fractures, compound fractures, bilateral or other associated fractures, extra-capsular neck of femur fractures and patients with previous history of neuromuscular disorders, all patients with age below 55 years and above 80 years, fracture painful hip before trauma, intra-capsular neck femur fracture managed by any other approach or treatment modality, patients with severe medical comorbidities and are unfit for surgery. Then patients were divided in two groups, Group A: patients to be operated by posterior approach and Group B: patients to be operated by lateral approach.

Both the approaches were performed under spinal anesthesia, in lateral decubitus with operative extremity facing up. All patients were given broad spectrum intravenous antibiotic in immediate preoperative period. Preoperative scrubbing and draping was done with sterile sheets.

Lateral approach:

A longitudinal incision is made centered on the greater trochanter. Incision can be made through tendon of gluteus medius extending distally to reflect vastus lateralis of the femur. At proximal end of the trochanter the gluteal muscles are split in line with their fibers. Care should be taken not to carry this split too proximally or injury to the superior gluteal nerve is a risk. The approach can be developed by dissecting down to bone and then reflecting the tissues in an anterior direction until capsule is incised around base of neck. The alternative is to divide the gluteus medius and minimus tendons separately, which exposes the hip joint capsule, which is then incised. The hip can then be exposed by flexion and external rotation of the femur allowing access to the fractured head in the acetabulum.

Posterior approach:

An incision centered on the greater trochanter, which extends distally down the shaft and proximally toward the posterior superior iliac spine. The more proximal part of the approach, which provides access to the sciatic notch and posterior column of the acetabulum. The fascia is divided in line with the incision. Above the level of the trochanter the gluteus maximus is split. More distally the exposure is facilitated by partial division of the gluteus maximus insertion into the linea aspera. The sciatic nerve should be identified and protected. The obturator internus and the gemelli are then divided and reflected posteriorly, where they lie over the sciatic nerve. The capsule can then be incised to expose the femoral head and neck. The neck is accessed by flexing the knee to 90 degrees and internally rotating the femur.

This was followed by prosthesis insertion . An immediate postoperative check-up X-

ray was done. The patients were allowed to sit on first postoperative day and immediate weight bearing was allowed as tolerated by the patient. Suture removal was done on 14th day. Then regular follow up was done at 3, 6, and 12 months to evaluate for surgical complications like dislocation, infection, periprosthetic fractures. Assessment of Harris hip score was done. Statistical Methods: The data was expressed in terms of percentages. The continuous variables were handled by calculating the mean and standard deviation. Student's 't' test was used for calculating significance of difference between two continuous variables. The categorical variables were handled by using chi square test and Fisher's exact test .

Results:

Twenty four patients were selected for the study, divided into Group 'A' and Group 'B'; twelve patients were studied in each group, who were in the age group of 55-80 years. Mean age of patients was 63.45 ± 6.48 years in group A and 64.70 ± 4.83 years in group B. We had almost equal distribution of males and females in both the surgical groups with female to male ratio of 1.5:1 for group A and 1.3:1 for group B. The involvement of right side was commoner than left side in both surgical groups. The most common mode of trauma was low energy injuries like fall at home in elderly patients. Road traffic accident was common in 55 to 60 years. The most common type of fracture was subcapital followed by transcervical and basicervical. One patient in posterior surgical group had ipsilateral proximal humerus fracture which was managed conservatively. The mean operating time for group A was 67 minutes and for group B was 72 minutes .The mean intraoperative blood loss was 150 ml in group A and 140 ml in group B which was statically insignificant .

Table 1: Difference types of parameters

Parameter	Posterior approach	Lateral approach
Mean operative time (min)	67	72
Intraoperative blood loss (ml)	150	140
Infection rate (%)	11.40	12.7

The most common complication in both the groups were infection, group A was 11.40% and in group B was 12.70%. Posterior approach carried an increased risk of prosthetic dislocation (1 case) as compared to lateral approach. There was no

intraoperative mortality seen in follow up period. No cases of abductor weakness, sciatic nerve injury, periprosthetic fracture, aseptic loosening, deep vein thrombosis were noted.

Table 2: Complications.

Complication	Posterior approach	Lateral approach
Hip dislocation	1	0
Sciatic nerve injury	0	0
Periprosthetic fracture	0	0
Abductor weakness	0	0
Aseptic loosening	0	0
Deep vein thrombosis	0	0

Average Harris hip scores were almost equal between the two groups (84.58% in group A and 83.42% in group B)

Table 3: Functional results

Functional results	Posterior approach	Anterior approach
Excellent (>90)	1	1
Good (80-89)	2	2
Fair (70-79)	1	1
Poor (<69)	0	0

Discussion:

The mean age of patients for posterior approach was years 63.45 ± 6.48 years for posterior approach and 64.70 ± 4.83 years for lateral approach and the difference was found statistically insignificant. The age group in our study was comparable to previous studies⁸⁻¹⁰. The female preponderance in the series can be attributed to the fact that the estrogen level decreases after menopause which in turn predisposes elderly females to osteoporosis. The neck femur fracture was classified according to their anatomic location. The most type of intracapsular neck femur fracture was subcapital. Transcervical was the second most common type.

The low energy trauma which includes fall at ground floor, slip in bathroom were most common cause of fracture as compared to high energy trauma like road traffic accidents. The distribution between two groups was almost same with 90% and 92.5% low energy trauma in posterior and lateral approaches respectively. Thus, simple trivial trauma like fall is the most common mode of injury for intracapsular neck femur fracture occurring in elderly patients in most of the studies¹¹⁻¹². Operating time for posterior approach was 67 minutes and for lateral approach was 72 minutes respectively. Mean intraoperative blood loss was 150 ml in posterior approach and 140 ml in lateral approach. Intraoperative blood loss was calculated by number of mops used and blood collected in suction machine before the wash is given. Hence intraoperative blood loss was comparatively higher in posterior approach. The most common complication in both the groups were infection, posterior approach was 11.40% and in lateral approach 12.70%. There are many risk factors predisposing to infection such as

comorbidities of patients, poor patient hygiene, and low sterile conditions. In our study 1 patient had dislocation following operated by posterior approach while dislocation was not seen in any patients of lateral approach. There were no other postoperative complications observed like sciatic nerve injury, periprosthetic fracture, aseptic loosening of prosthesis, deep vein thrombosis in both surgical groups. In most studies on intracapsular neck femur fracture the functional outcome was assessed by Harris hip score. In our study the average Harris Hip Score at 1 year follow up was 84.58 in posterior approach and 83.42 in lateral approach. Patients in both groups had good average Harris Hip Score and difference was statically insignificant. The distribution in our study was comparable to studies performed by other authors^{13,14}.

Conclusion:

The surgical approaches - posterior and lateral, were similar in terms of pain, functional outcome, intraoperative and post-operative complications, except the rate of prosthesis dislocation. One surgical approach cannot be based on evidence on early surgical complication rates alone. More outcome parameters should be included together with studies on the severity of various kinds of complications. A more extensive database and meta-analyses are needed to compare the infrequent surgical complications.

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Original Article

A Study On CRP Level And Blood Pressure In Acute Phase After Ischemic Stroke.

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Abstract

Background and objective: Level of CRP and blood pressure response after ischemic stroke are variable. Stronger inflammatory response as well as high blood pressure after stroke is associated with poor outcome though it is not known whether elevated blood pressure leads to inflammatory response after stroke. The objective of the study was to assess level of CRP and blood pressure after acute ischemic stroke and to see any relationship between them.

Methods: This observational cross sectional study was undertaken in the Department of Medicine and Neurology of Dhaka Medical College Hospital, Dhaka during the period from October, 2021 to March, 2022. A total number of 100 patients were selected after meeting inclusion and exclusion criteria. The clinical details and investigations of the respondents were reviewed. C-reactive protein was measured in patient's serum and blood pressure was recorded during admission. Data were recorded in a pre-designed case record form. The association between BP components and the odds of having an elevated CRP level (> 6mg/dL) was assessed by logistic regression analysis.

Results: Majority of the patients were at fourth to fifth decades of life. Out of 100 cases 62% were male and 38% were female with male-female ratio of nearly 1.5:1. In 67% cases CRP was positive (>6mg/dl) and 33% cases CRP was negative (<6 mg/dl). Mean value of C-reactive protein was 42.057 (SD± 21.256). Seventy-one (71) percent of the patients had history of hypertension. Other risk factors are diabetes mellitus (37%) and smoking (39%). There was no significant effects of risk factors on CRP except hypertension. Mean arterial systolic BP (SBP), diastolic BP (DBP), mean arterial pressure (MAP), or pulse pressure (PP) were slightly higher among CRP positive patients. An increase in SBP, DBP, MAP or PP was significantly associated with an increase in the odds of having an elevated CRP level, independent of other associated study factors. For each 10 mm Hg increase in SBP, DBP, MAP, or PP, the odds of having a high CRP level increased by 72% ($P<0.0001$), 10% ($P<0.0001$), 21% ($P<0.0001$) and 10% ($P<0.0001$) respectively. When the same model was rerun, after adjusting all considered BP components, only SBP significantly increased the odds of an elevated CRP level by 77% ($P<0.0001$).

Conclusion: Increased SBP was significantly associated with elevated levels of circulating CRP in ischemic stroke patients. These findings support a possible role of acute hypertension after stroke as an inflammatory stimulus contributing to ischemic brain inflammation.

Key words: Stroke, CRP, Blood Pressure.

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Introduction:

Stroke remains third leading cause of death after heart disease and cancer, after the age of 40.¹ Of the hundreds of thousands of stroke survivors each year, approximately 30 percent require assistance for activities of daily living, 20 percent require assistance with ambulation and 16 percent require institutional care.² In general, its incidence is 150 to 300 per 100,000 populations and prevalence is 600/100,000 population. The highest incidence of stroke seen is 7/1000 at Novosibirsk, Russia, and lowest is 2.4/1000 at Dijon, France.³ In Bangladesh the incidence of stroke is 700,000 per year. Stroke causing about 4 million deaths per year, three-quarters of them in developing countries.⁴ It accounts for 12 percent of all deaths in England and Wales and is the most important single cause of severe disability in people living in their own home.^{5,6} Of all strokes, 85 percent are due to ischaemic infarction and 15 percent are due to haemorrhage. Ischaemic stroke may be atheromatous, thrombotic and embolic. There are many risk factors of stroke. Ischaemic stroke may be atheromatous, thrombotic and embolic.⁷ Although the proximate cause of most brain infarcts is thrombus formation, atherosclerosis is the chief underlying cause.⁸ C-reactive protein (CRP), one of the acute-phase reactants, is an indicator of underlying systemic inflammation and a novel plasma marker of atherothrombotic disease.⁹ Furthermore, elevated plasma levels of C-reactive protein are not disease specific but are sensitive markers produced in response to tissue injury, infectious agents, immunologic stimuli, and inflammation.¹⁰ Elevated blood levels of C-reactive protein (CRP) are associated with an increased risk of atherosclerotic vascular disease including stroke.¹¹ However the role of CRP in the etiology and prognosis of ischemic stroke remains to be clearly defined.¹² One

hypothesis is that CRP plays a direct causal role in the pathogenesis of atherosclerosis by promoting endothelial cell adhesion molecule expression, monocyte recruitment or complement activation, or by mediating low density lipoprotein cholesterol uptake by macrophages.¹³ This “atherogenic hypothesis” is consistent with prospective observational studies of apparently healthy individuals as well as patients with established vascular disease, including stroke which have shown that elevated blood concentrations of CRP are a significant predictor of future cardiovascular events, independent of conventional vascular risk factors.¹⁴ Elevated blood concentrations of CRP during the acute phase of ischemic stroke event primarily reflect the extent of cerebral ischemic injury and its complications.¹⁵ Higher values of C-reactive protein (CRP) are significantly associated with large infarct size and worst outcome.¹⁶ So C-reactive protein might indicate the inflammatory status during the acute phase of ischaemic stroke. Use of plasma CRP levels may aid in identifying a potentially large number of men and women who are at risk for cerebrovascular events.¹⁰ However, many patients (~25%) had normal levels of inflammation markers after stroke, implying that ischemic lesion itself does not induce a full-blown acute-phase response.¹⁴ The specific stimuli that promote inflammatory response in acute ischemic stroke have not been fully elucidated. Hypertension is a well-known risk factor for ischemic stroke and the effect of blood pressure-lowering treatment in preventing first stroke is well established, but the pathologic and molecular mechanisms by which elevated blood pressure (BP) leads to vascular disease are uncertain: hypertension may promote endothelial expression of cytokines and stimulate inflammation.¹⁷ These data are particularly intriguing given

that inflammation plays a critical role in the pathogenesis of atherosclerosis.⁸ In addition, the BP response after an ischemic stroke is variable: three quarters of patients with acute ischemic stroke have elevated BP at presentation, of which about half have a history of hypertension.¹⁸ BP declines spontaneously after stroke onset and returns to prestroke levels in two thirds of patients within the first few days.¹⁹ The management of hypertension after stroke has remained a matter of some debate. This is reflected in surveys of clinical practice, e.g. the Stroke Association reported that 6% of physicians would start antihypertensive treatment immediately on admission, 21% would wait a few hours, though the rest would wait anything from a few days to a few weeks.²⁰ A similar lack of consensus exists in the United States, where the University Health Consortium Stroke Benchmarking Project reported that 57% of stroke patients received antihypertensive therapy following admission, of these 54.5% continued pre-admission drugs while 45.5% had therapy introduced *de novo*. Furthermore, there was significant variability in the thresholds used to intervene, 67% using SBP ≥ 180 mmHg and 33% using values < 180 mmHg.²¹ Most studies, although not all, have found that high BP in the acute phase of stroke is associated with a poor outcome.²² An explanation for these findings has not been given. High BP might promote early recurrence, hemorrhagic transformation, or the formation of cerebral edema. Both high and low BP were found to be independent prognostic factors for poor outcome, relationships that appear to be mediated in part by increased rates of early recurrence and death resulting from presumed cerebral edema in patients with high BP and increased coronary heart disease events in those with low BP.²³ At the same time, a stronger inflammatory response after stroke

is associated with a severe neurological deficit and a poor outcome with a higher risk of new recurrent cardiovascular events.¹⁴ If the link between BP and stroke outcome is indeed mediated by inflammatory response, one would expect to see positive associations between BP and markers of systemic inflammation, such as CRP. An exploratory analysis in the same stroke cohort has suggested that elevated levels of systolic or diastolic BP in the acute phase after an ischemic stroke are associated with elevated levels of CRP.¹⁴

Methodology:

This was an observational cross sectional study which was carried out in the department of medicine and department of neurology in Dhaka Medical College Hospital from October, 2021 to March, 2022. As the study was carried out in a very short period of six months and it was a hospital based observational study, 100 patients of Ischemic stroke was taken. Purposive type non probability sampling technique was applied to enroll the study. All the patients with first ever ischemic stroke admitted in department of Medicine and department of Neurology, Dhaka Medical College Hospital were the study population.

Inclusion criteria:

- Acute ischaemic stroke proved clinically and by neuroimaging (CT/MRI of brain)
2. Stroke patients of both sexes.
3. Age: > 30 years of age.
4. Stroke patient who is admitted within 7 days after onset of symptoms.

Exclusion criteria:

1. Age below 30 years.
2. Hemorrhagic stroke proved by neuroimaging.

3. Obvious signs and clinical evidence of hospital acquired infection (aspiration pneumonia, catheter induced sepsis etc).
4. History of acute myocardial infarction, venous thrombosis, and myeloproliferative diseases.
5. History of rheumatological and connective tissue diseases
6. History of malignancy
7. History of recent surgery (within one month)
8. History of recent infection (within one month)

VARIABLES:

Age, Sex, Cigarette smoking status, Dyslipidemia (hyper-cholesterolemia, hyper-triglyceridemia), Diabetes mellitus, Oral contraceptive pills (OCP), Neuroradiological findings (single/multiple infarcts, large/small infarcts).

STUDY PROCEDURE:

After taking the detail history and physical examination a total 100 patients were included in the study group whom met the inclusion and exclusion criteria. All of them were investigated for serum C-reactive protein, complete blood count, urine R/E, serum creatinine, random blood sugar (RBS), serum lipid profile, ECG and chest X-ray PA view. C-reactive protein in serum was estimated by Nephelometric System by using commercial kit (DADE BEHRING BN 100, USA).

DATA ANALYSIS: After editing and coding, the coded data was directly entered into the computer to analyze by using statistical package for social sciences (SPSS) software. Differences in proportions were evaluated by X^2 analysis, unpaired t test for continuous normally distributed

variables, and Mann-Whitney U test for non-normally distributed variables. A Pearson correlation analysis was performed to assess any relationship between log-normalized levels of CRP and blood pressure at the entry. Analyses were designed to assess the association of BP components (SBP, DBP, MAP, and PP) with CRP levels after adjusting for the other study variables. In our analyses, the BP components and other study factors were independent variables, and CRP was the dependent variable. We analyzed CRP as a dichotomous outcome (CRP <6 mg/dL or CRP >6 mg/dL) in logistic regression models. Individual BP component models assessed the effect of a single BP component (SBP, DBP, MAP, or PP) on CRP, without adjustment for other BP components. Dual BP component models assessed the effects of MAP and PP on CRP after adjustment for one of the other BP components (SBP and DBP). A final model assessed the effects of all BP components (SBP, DBP, MAP, and PP) on CRP level. Data cleaning validation and analysis was performed using the SPSS/PC software and graph and chart by MS excel. Categorical variables were reported as percent, mean $\pm$ standard deviation. Percentages and proportions will be presented with 95% confidence intervals. P value <0.05 was taken as minimum level of significance.

RESULTS AND DISCUSSION:

A total of 100 patients diagnosed as ischemic stroke clinically and confirmed by neuroimaging were evaluated. The median time from the onset of symptoms to BP measurement and blood sample collection was 12 hours and 15 hours to CT scan execution. Among them 63% of patients were found CRP positive (>6mg/L) and 37% were found CRP negative (<6mg/L). Results are showing in tables and charts.

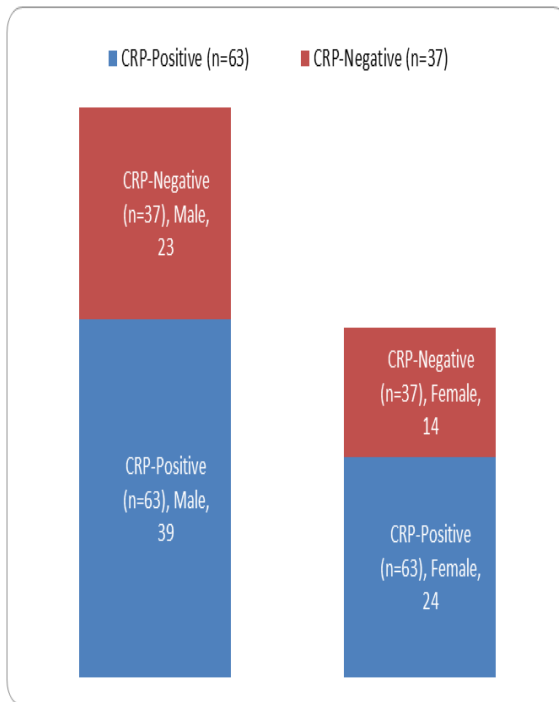
Figure 1: Sex distribution among the subjects

Figure-1 shows that among male patients 39(62.9%) were CRP positive and 23(37.1%) were CRP negative which were statistically insignificant ($p>0.05$). Among female patients 24(63.15%) were CRP positive and 14(36.84%) were CRP negative which were also statistically insignificant ($p>0.05$).

Table-1 shows no significant relation between ESR and C-reactive protein among the study population.

Table-1: Relationship between ESR and C-reactive protein

	CRP	ESR	r value	p value
Range	3.6-105.9	2-20	-0.152	>0.1 ^{NS}
Mean ±SD	42.057 ± 21.256	12.4 ± 4.88		

*NS- not significant

Table 1 shows no significant relation between ESR and C-reactive protein among the study population.

Table 2 shows prevalence of common risk factors among patients. Present smoker and who stopped smoking for less than 6 months was considered as smoker. Hypertension was significantly ($p<0.001$) distributed among CRP- Positive patients. But Smoking, Diabetes Mellitus and Oral contraceptive pills (female) had not significant relation with CRP.

Table-2: Study of risk factors among the study subjects

Parameters	CRP Positive (n=63)	CRP Negative (n=37)	P value
Smoking habit			
Yes (n=39)	23	16	>0.05 ^{NS}
No (n=61)	40	21	
Hypertension (Pre-stroke)			
Yes (n=71)	49	22	<0.001**
No (n=29)	14	15	
Diabetes			
Yes (n=37)	24	13	>0.05 ^{NS}
No (n=63)	39	24	
OCP (female only) (n=40)			
Yes (n=21)	13	8	>0.05 ^{ns}
No (n=19)	11	8	

NS-not significant **-significant

Table 3 shows that CRP was positive significantly in single large infarct and where there was associated brain swelling

Table-3: Neuroradiological findings among study population.

Neuro-radiological findings	CRP Positive (n=63)	CRP Negative (n=37)	P value
Single, small (n=27)	16	11	>0.10 ^{NS}
Single, Large (n=44)	33	11	<0.0001*
Multiple (n=29)	14	15	>0.05 ^{NS}
Cortical Infarct (n=78)	37	41	>0.10 ^{NS}
Brain Swelling (n=59)	42	17	<0.0001*

NS-not significant **-significant

In Table-4, Mean systolic blood pressure was 152.67 (SD+21.65) mm Hg among the patients which was significantly higher ($P<0.001$). Similarly Mean diastolic blood pressure was 90.17 (SD+13.93) mm Hg among patients which was also significantly higher ($P<0.001^{***}$). SBP, DBP, MAP and PP were higher in CRP – positive group.

Table-4: Blood pressure findings among the patients

Blood Pressure (mm Hg)	CRP Positive (n=63)	CRP Negative (n=37)	P value
SBP, Mean±SD	167± 16	155± 13	<0.0001**
DBP, Mean±SD	98± 15	90± 9	<0.0001**
MAP, Mean±SD	121± 15	112± 9	<0.0001**
PP, Mean±SD	68± 7	64± 10	<0.0001**

** Significant

Table 5 presents the results of multivariable-adjusted logistic regression models assessing the association of single BP components with elevated CRP. This table shows that SBP, DBP, MAP and PP

were significantly associated with an increase in the odds of having an elevated CRP level, independent of other study factors.

Table-5. Logistic regression models assessing the association between single blood pressure components and the odds of having an elevated CRP level.

Models	Odds ratio (95% CI) For Elevated CRP	P value
Model 1* SBP	1.72 (1.46-2.02)	<0.0001*
Model 2* DBP	1.10 (1.06-1.14)	<0.0001*
Model 3* MAP	1.21 (1.15-1.29)	<0.0001*
Model 4* PP	1.10 (1.06-1.14)	<0.0001*

*Adjusted for all independent variables that showed a significant association ($P<0.05$) with the variable, Odds ratios were given per 10 mm Hg increase.

Table 6 assessed the association between SBP and DBP with CRP after adjustment for MAP and PP and other study factors. In model 1 and model 2 it has been observed that MAP and PP was no longer associated with elevated CRP respectively. But in Model 3 and Model 4, MAP and PP were significantly associated with CRP respectively.

Table-6: Logistic regression models assessing the association between dual blood pressure components and the odds of having an elevated CRP.

Models	Odds ratio (95% CI) for elevated CRP	P value
Model 1*		
SBP	1.79 (1.48-2.16)	<0.0001***
MAP	0.96 (0.89-1.05)	NS
Model 2*		
SBP	1.72 (1.46-2.03)	<0.0001***
PP	1.03 (0.97-1.081)	NS
Model 3*		
DBP	0.31 (0.21-0.46)	<0.0001***
MAP	5.51 (3.23-9.41)	<0.0001***
Model 4*		
DBP	1.72 (1.46-2.03)	<0.0001***
PP	1.77 (1.48-2.11)	<0.0001***

NS-not significant **-significant

*Adjusted for all independent variables that showed a significant association ($P<0.05$) with the dependent variable, Odds ratios were given per 10 mm Hg increase.

Table 7 shows that DBP, MAP and PP were no longer associated with elevated CRP whereas a 10 mm Hg rise in SBP significantly increased the odds on an elevated CRP level by 77% (OR-1.77;).

Table-7: Logistic Regression Models Assessing the Association between All Blood Pressure Components and the Odds of Having an Elevated CRP.

Models	Odds ratio (95% CI) for elevated CRP	P value
SBP	1.77 (1.48–2.11)	<0.0001*
DBP	0.97 (0.92–1.02)	NS
MAP	0.95 (0.88–1.03)	NS
PP	1.03 (0.98–1.09)	NS

*significant

Discussion: The present study showed that serum C-reactive protein level was found to be elevated in 63% patients out of 100. Mean C-reactive protein value was 42.057 (SD±21.256). These findings are consistent with several studies.^{24,25} The possible explanations are: 1. CRP concentration may reflect the degree of stroke severity, correlating with the degree of inflammation directly consequent to cerebral infarction. 2. CRP concentration may indicate underlying unstable atherosclerotic disease. 3. CRP may be raised as a consequence of secondary complications of stroke at the time of sampling.²⁶

We have found 37 stroke patients were negative for C-reactive protein value. Grau, 1997 found about 25% of patients with first ever ischaemic stroke had normal levels of CRP after stroke. It might be due to the variability of the degree of inflammatory response to ischaemic stroke.⁹ About 62% percent of the study subjects were male which indicate that stroke affects more male patients then female.²⁷ In this study 39% stroke patients were smoker. In a study done by (Ullah *et al.*, 2002) showed 59.84% smoker among their stroke patients.²⁸ This difference may be due to the variation in the number of cases and anti-smoking campaign.

Seventy one (71) percent of stroke patients were hypertensive. Di Napoli *et al.*, 2001 in their study of 1020 stroke patients had shown two third patients were hypertensive.¹⁴ Muhammed Ramjan *et al.*, 2012 in their study showed that 52% ischemic stroke patients with raised CRP level were hypertensive.²⁷

In this study 37% of stroke patients were suffering from diabetes mellitus. Sheuli found 26.7% had Diabetes Mellitus in her study on ischaemic stroke. Mean total cholesterol, triglyceride and LDL level were slightly higher and mean HDL level

was lower among CRP positive stroke patients in comparison to CRP negative patients. This finding is consistent with previous studies (Sheuli,2006). It is already established that exposure of the endothelial surface to risk factors such as hypertension, hyperglycaemia, oxidized low density lipoprotein (LDL) results in endothelial injury that promotes atherosclerosis and its complications.

In this study, most of the infarct was single (71%) as evidence by neuroradiological findings and among them CRP positivity was significant in case of large infarct (>1.5 cm). CRP Positive was also significant where there was associated brain swelling (59%). Di Napoli et al.,2003 in their study found significant CRP Positive among large infarct.²⁹

The mean SBP, DBP, MAP and PP was higher in CRP positive patients than CRP negative patients (Table-6). An increase in BP levels was associated with increased odds of having an elevated CRP level (>6mg/dl) among first ever ischemic stroke patients. This association was independent of a number of other factors, including demographic factors, cardiovascular risk factors and neuroradiological findings. In a study done by Di Napoli *et al* showed similar results.²⁹

The results of multivariable-adjusted logistic regression models assessing the association of single BP components with elevated CRP (Table-7) showed that, after adjustment for other study factors, an increase in SBP was significantly associated with an increase in the odds of having an elevated CRP level. For each 10 mm Hg increase in SBP, the odds of having an elevated CRP level increased by 72% (odds ratio [OR], 1.72; 95% confidence interval [CI], 1.46 to 2.02; $P<0.0001$). Similarly to SBP, an increase in DBP,

MAP, or PP was significantly associated with an increase in the odds of having an elevated CRP level, independent of other study factors. Similar results was found in the study done by Di Napoli. *et al*.²⁹

After running dual-component BP models that assessed the association between SBP and DBP with CRP after adjustment for MAP and PP and other study factors (Table 8), it was observed that MAP and PP were no longer associated with elevated CRP, whereas a 10 mm Hg rise in SBP and DBP significantly increased the odds of an elevated CRP level by 79% ($P<0.0001$) and 72% ($p<0.0001$) respectively. When all BP components were added in the final model (Table 9); DBP, MAP, and PP were no longer associated with elevated CRP, whereas a 10 mm Hg rise in SBP significantly increased the odds of an elevated CRP level by 77% (OR, 1.77; 95% CI, 1.48 to 2.11; $P<0.0001$). Di Napoli *et al* in his study found that SPB showed a persistent, strong, significant association with CRP when DBP, MAP, and PP were also taken into account.²⁹

Conclusion: Our study confirms that increased SBP was significantly associated with elevated levels of circulating CRP in ischemic stroke patients. These findings support a possible role of acute hypertension after stroke as an inflammatory stimulus contributing to ischemic brain inflammation.

Recommendation: Future studies need to clarify whether or not an elevated BP leads to increased inflammatory response after stroke. The levels of BP after an ischemic stroke are one of underlying processes related to inflammation. From this point of view, because higher CRP levels are an independent prognostic factor after stroke and high BP is apparently associated with higher CRP levels, the current approach to

the treatment of acute hypertension after stroke probably should be revisited from different perspectives.

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Original Article

Non-operative Management of Perforated Peptic Ulcer

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Abstract:

Background and Objective: To determine whether surgery could be avoided in selected patients with perforated peptic ulcer.

Patients and Methods: A prospective study of the outcome of non-operative treatment in patients with a clinical diagnosis of perforated peptic ulcer was conducted. Of all 41 patients with clinical diagnosis of perforated peptic ulcer over the 3-year period, 35 were included for conservative treatment consisting of intravenous fluid resuscitation, nasogastric suction, and intravenous administration of antibiotic (Ceftiaxone 1 gm. IV every 12 hrs and metronidazole iv 8 hourly) and omeprazole 40 mg. IV every 12 hrs.

Results: Five (14%) of these 35 patients did not improve after 12 hours of conservative treatment and required an operation. All had unsealed perforation and were true failure. There was no mortality in this conservative group and no significant difference in the morbidity, such as complications or median hospital stay, between the failure group and the conservative group. Patients over 70 years old were less likely to respond to conservative treatment ($P < 0.05$).

Conclusions: In patients with perforated peptic ulcer, an initial period of non-operative treatment with careful observation and resuscitation may be safely allowed, except in patients over 70 years old, and that the use of such an observation period can obviate the need for emergency surgery.

Keywords: Non-operative Management, Perforated Peptic Ulcer

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INTRODUCTION

Therapeutic options in patients with perforated peptic ulcer are simple closure or immediate definitive operation. Conservative treatment, originally proposed by Wangensteen, was recommended as the treatment of choice in perforated acute peptic ulcer by

Taylor in 1956¹. Today it is reserved for patients considered to be too ill to stand the stress of surgery or in situations where immediate surgery is unavailable. Atrial of conservative management in all cases of perforated peptic ulcer that met the inclusion criteria was undertaken. Its efficacy and long-term outcome were assessed.

Patients and Methods

Forty patients admitted under dept of surgery TMCH, with perforated peptic ulcer, from September 2016 to october 2019 were included. The clinical details are shown in Table 1. All 41 patients were diagnosed by history and clinical examination and all had radiological evidence of perforation (pneumo-peritoneum). Inclusion criteria consisted of a clinical diagnosis of perforation in less than 12 hours¹, with stable hemodynamic condition² and age not exceeding 70 years¹. Conservative management consisted of intra- muscular analgesia, intravenous antibiotic (ceftriaxone 1gram every 12 hours and metronidazole iv 8hourly), omeprazole (40mg intravenously every 12 hours) and hydration. A large- bore

radio-opaque nasogastric tube was passed to empty the stomach by intermittent suction. Conservative treatment was abandoned if the patient failed to improve or deteriorated (increasing tachy- cardia, pyrexia, abdominal distension or pain) after 12 hours of conservative treatment.

Results

Six patients who failed to meet the inclusion criteria underwent immediate surgery. All had perforation over 12 hours before presentation. A total of 35 patients entered a trial of conservative therapy and 30 were successfully managed. Five patients failed to improve and underwent laparotomy.

Table 1 Clinical characteristic of 41 patients with perforated peptic ulcer

Characteristics	Number of patients
Male	39
Female	2
Mean age in years (range)	45(26-70)
Previous peptic ulcer	10
NSAIDS or steroid used	2

There were no significant difference between the failure group and the successfully managed group regarding age, duration of perforation before presentation, medications or length of ulcer symptoms. Conservative treatment did not prolong hospital stay (Table 2).

Failure Group

Five patients underwent laparotomy after 12 hours of trial. All had unsealed perforations and were true failure of conservative treatment.

Complications

Complications in the conservative group included paralytica ileus (N=1), wound infection (N = 1) and diamplicationrrhea (N = 1). No mortality .

Subsequent Course

Seven successfully treated patients could not be traced. Twenty-three patients were followed up for 1-

4 years (mean 2.9 years). All 23 patients did not require definitive surgery and did not develop re-perforation. Two patients died of unrelated causes.

Nine patients had medically managed for dyspepsia and twelve patient were asymptomatic.

Table 2 Comparison of clinical characteristics of 41 patients with perforated peptic ulcer in relation to eventual outcome

	Emergency Surgery (n = 6)	Failed conservative treatment (n = 5)	Successful conservative treatment (n = 30)
Mean age (years)	50	43	47
Median duration of perforation (hrs)	18	5	8
Symptoms			
Acute (<3 months)	2	2	10
Chronic (>3 months)	4	3	20
Complications	2	1	3
Median hospital stay (days)	10	9	8
Mortality	1	-	-

Discussion:

The results of conservative treatment were satisfactory. Thirty (85%) were successfully treated with conservative management. Complications occurred in 11%, and there was no mortality. These results were achieved using strict selection of patients and regular re-assessment. When conservative treatment failed, it was promptly abandoned and operation was

performed. Nasogastric suction has been the vital element in conservative treatment, in keeping the stomach empty, allowing sealing of the perforation to take place. Careful positioning of the tube and regular aspiration are important. Opposition to conservative treatment is related to the possible consequences of an error in the diagnosis. However, as Taylor has shown, with regular re-assessment, misdiagnosis should become rapidly

apparent and conservative treatment can then be abandoned. Taylor reported no serious consequences resulting from the short delay in correcting the diagnosis¹. The chief contraindications include lack of patient compliance, unsuccessful nasogastric intubation and late presentation. Using conservative treatment, definitive surgery cannot be performed at the time of operation. However, not all chronic peptic ulcer perforation require definitive procedures and with the advent of PPI, the number may be even less³. Conservative treatment allows time for an accurate ulcer history, for clinical and interval endoscopic assessment and for elective definitive treatment if required.

The author does not advocate conservative treatment for all perforated peptic ulcer but offer as a reasonable option provided strict criteria and guide-lines are followed.

That some perforated ulcers sealed themselves off spontaneously with omentum, even though there was considerable free air in the peritoneal cavity, had been noted by Taylor and Visick when they operated on duodenal ulcers that had perforated acutely. Ross off³ summarized this experience in Los Angeles of 377 cases, 43% were shown to be sealed off.

Crofts TJ et al, from Hong Kong⁴ conducted a prospective randomized phase 3 trial with 83 patients. Forty patients were managed conservatively, if there was no improvement after 12 hours they would undergo surgery. There were no significant differences in morbidity and mortality between these two groups of patients.

There are wide variation in the time delay between perforation and treatment is also believed to be important. In the Hong Kong Series⁴, the duration in the non-operative group was 10.5 hours and in an earlier Hong Kong series⁹, the median was 12.6 hours. In the Exeter series⁵, 33% of those over 70s had perforation for longer than 24 hours. Conservative treatment is not advised with a history longer than 12 hours⁴.

Concern over peritoneal soilage has led surgeons to believe that it is important to carefully empty and wash out the peritoneal cavity with large volume of normal saline at the time of operation. The results are quite gratifying, as large volume of foul smelling fluid is oftenly removed. However the actual benefit of this part of the operation is not so clear. Rosoff, in discussion of Donovan et al³, reported that of 109 patients treated non-operatively during the acute phase, only 3 developed intra-abdominal abscesses.

Though there has also been concern about the ulcer re-leaking, this has been a very unusual occurrence. In the studies reported by Berne and Rosoff¹⁰, this occurred in only 2 of 109 patients treated non-operatively. Donovan et al³ reported no re-leaks, and there were no re-leaks in the patients described here. However, this knowledge provides surgeons the opportunity to avoid celiotomy in perforated acute ulcer disease.

Conclusions

In patients with perforated peptic ulcer, an initial period of non-operative treatment with careful observation may be safely allowed except in

patients over 70 years old, patients with shock, or perforation over 12 hours. The use of such an observation period can obviate the need for emergency surgery. This observation also permits surgeons to adopt non-operative therapy in selected case, such as when operative risk is excessive or when only closure of the perforation is contemplated.

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CASE REPORT**Cardiac Tamponade As The Initial Presentation Of Systemic Lupus Erythematosus: A Case Report And Review Of The Literature****Rahman HH¹, Miah MNA², Fakhruzzaman M³, Atiqullah S⁴, Israt S⁵****ABSTRACT**

Systemic lupus erythematosus (SLE) is an autoimmune disease that can involve any organ system, exhibiting great diversity in presentation. Cardiac tamponade as the initial presentation of SLE is rare. We report the case of a 23 year old female who presented with complaints of chest pain, shortness of breath and fever over 15 days. Clinical examination strongly suggested cardiac tamponade which was confirmed by investigations and treated with pericardiocentesis. After a thorough investigation, the underlying diagnosis of SLE was confirmed using the Systemic Lupus International Collaborating Clinics (SLICC) criteria. A review of recent studies shows that common initial presentations of SLE include constitutional symptoms, renal disease, musculoskeletal and cutaneous involvement. In presenting this case and reviewing the literature we emphasize the importance of SLE as a differential diagnosis when presented with pericarditis in the presence or absence of cardiac tamponade.

Keywords: Systemic lupus erythematosus, Cardiac tamponade, Pericarditis, Pericardial effusion

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Background

Systemic lupus erythematosus (SLE) is an autoimmune disease that can involve any organ system resulting in a great diversity

of clinical presentation. Pericarditis and pericardial effusions in SLE are well recognized. Cardiac tamponade is a medical emergency that develops when a pericardial effusion reaches a critical amount,

limiting cardiac inflow and leading to hemodynamic compromise. In this case report we present and discuss pericarditis leading to cardiac tamponade as the initial manifestation of SLE.

Case presentation: A 23 year old housewife presented with complaints of chest pain, shortness of breath and fever over the past 15 days. The left-sided chest pain was described as “squeezing,” and was associated with palpitations. Both the pain and shortness of breath were worse in the supine position and partially relieved on leaning forward. For the last six months she developed puffiness of face and then gradual swelling of whole body. Over the last three months she was becoming increasingly fatigued and noticed significant weight loss, intermittent fevers and arthralgia affecting all the small and large joints of limbs. She denied hair loss, pregnancy loss, skin rash or any medication use with a positive history of recurrent oral

ulcers. There was no known family history of autoimmune disease. On examination she had a heart rate of 110 bpm, respiratory rate of 25 breaths/min, blood pressure of 90/60mmHg and a temperature of 102°F. She was underweight with a body mass index of 14.7 kg/m², had pale conjunctivae. On cardiovascular examination heart sounds were muffled and the apex beat was diffuse and displaced inferiorly. The pulse was diminished on inspiration. It was difficult to formally assess for pulsus paradoxus due to the patient’s abnormal respiration. Jugular venous distension was evident. Respiratory examination revealed decreased breath sounds at the left lung base which was also dull on percussion. The rest of the examination revealed leg oedema and left sided anterior chain of cervical lymphadenopathy, 4 in number, matted, soft, tender, raised local temperature, not fixed with underlying structures or overlying skin or no discharging sinus.

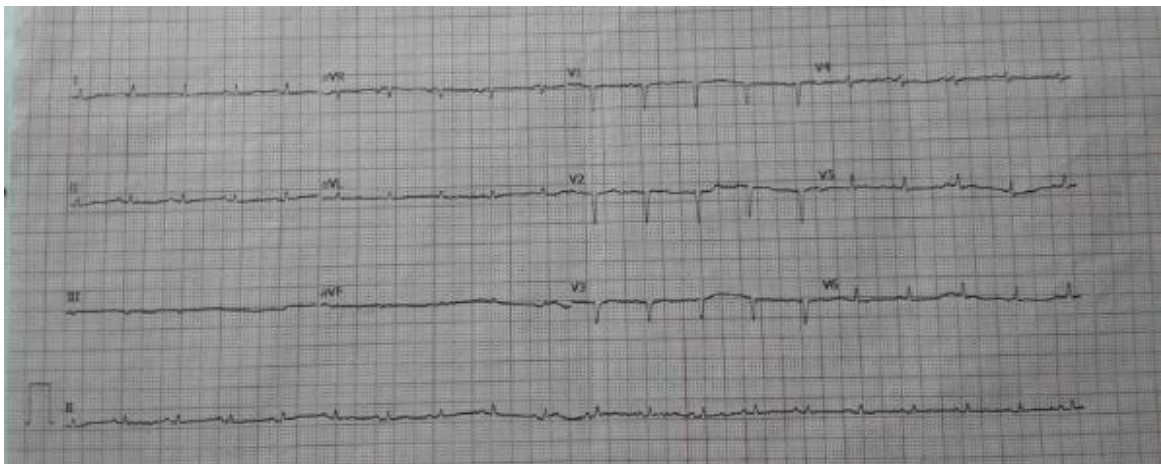


Figure 1. Low voltage ECG with electrical alternans

Electrocardiography showed sinus tachycardia, low voltage and electrical alternans [Figure 1]. The chest radiograph displayed an enlarged cardiac silhouette with a left-sided pulmonary infiltrate

[Figure 2]. Transthoracic echocardiography confirmed features of cardiac tamponade from a large circumferential pericardial effusion, along with mobile intrapericardial

fibrinous strands and the pleural effusion [Figures-3].

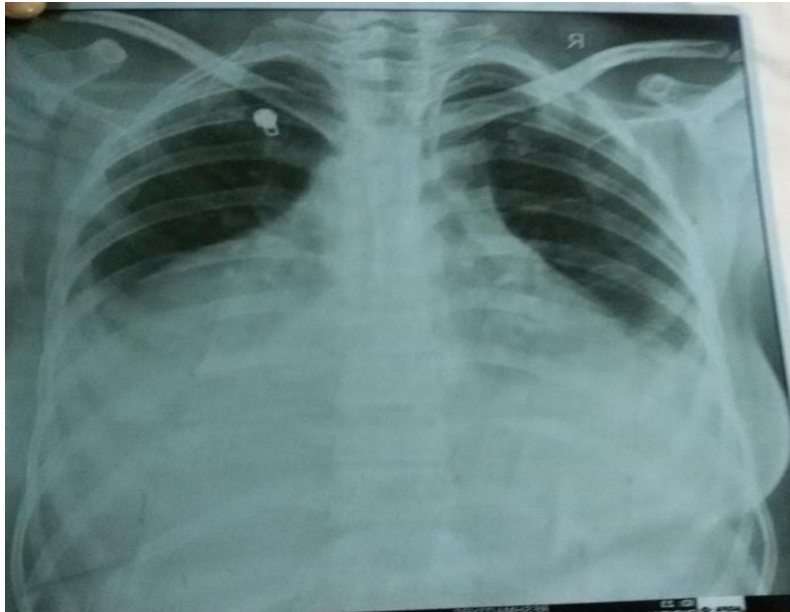


Figure 2: Cardiomegally with oligoemic lung field and left basal opacity

Echocardiography guided pericardiocentesis was then performed and 500 mL of pericardial fluid was drained, immediately bringing relief to the patient. Repeat echocardiography showed re-accumulation of huge amount of pericardial fluid. Twice paricardiocentesis was done and study of pericardial fluid revealed total cell count 500/cmm, L= 80% N=15%, RBC = 2-5%. Gram's stain and AFB and ADA negative, protein 5.14 gm/dl, sugar 101mg/dl.

With this background associated with high ESR= 108 mm in 1st hr. & CRP 30 mg/dl and considering the matted cervical lymphadenopathy and very high incidence of tuberculosis in Bangladesh anti TB chemotherapy CAT-1 with prednisolone 30mg/ day was started three weeks back. Patient again developed dyspnea and ascites with deterioration of clinical parameter and repeat echocardiography revealed huge pericardial effusion (21mm). Then investigated for SLE considering the young

female with serositis and oral ulceration, pale conjunctiva, there was ANA +ve (34 u/ml), AntiDs- DNA positive at high titre (164.0U/ml) and reduced complements level (S.C3= 0.219g/l & C4= 0.066g/l), urine albumin ++ and RBC=3- 4 /hpf and 24hrs UTP= 0.5gm, HIV screening test & tuberculin test were negative.

The diagnosis of SLE was established on the basis of positive clinical and immunological finding. The patient satisfied 4 of the Systemic Lupus International Collaborating Clinics (SLICC) criteria for classifying SLE, namely serositis, anaemia (Hb=7.8gm/dl), haematuria and proteinuria, low complements level, positive serum ANA and Anti Ds-DNA antibodies. Supporting the diagnosis was the history of arthralgia, lymphadenopathy, elevated ESR with no response to anti tubercular chemotherapy.

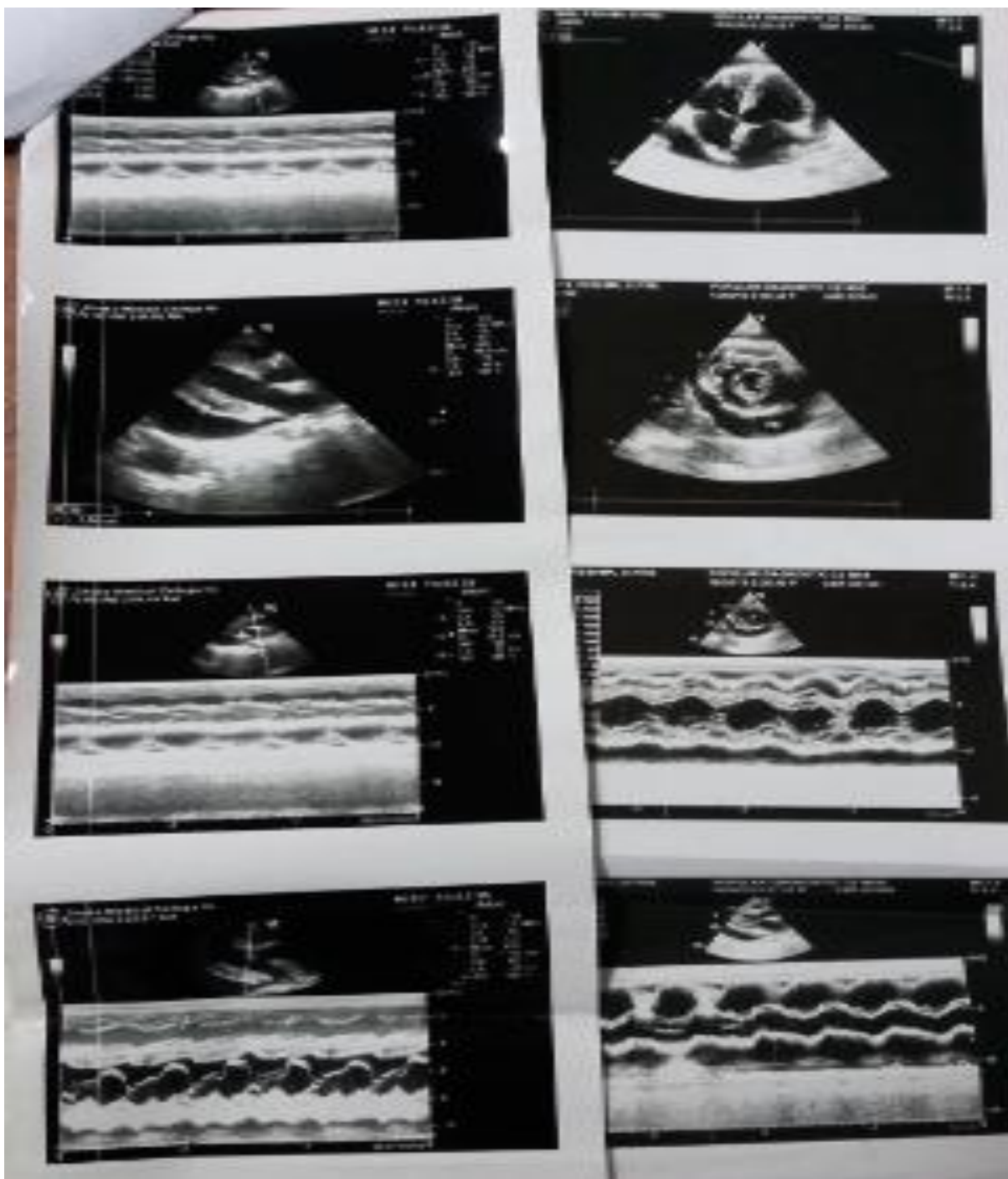


Figure-3: Large circumferential pericardial effusion

Discussion

SLE is one of the most common autoimmune connective tissue diseases in female¹. Despite this, relatively few studies have reported on the clinical features of SLE at presentation². Common initial presentations of SLE included constitutional symptoms, renal disease, musculoskeletal and cutaneous involvement. Less frequently involved at SLE presentation were the neuropsychiatric, pulmonary and cardiac systems, with pericarditis reported in 24% of cases at presentation³⁻⁴. Cardiac tamponade is a known complication of SLE, albeit a very rare manifestation⁵. More typical cardiac manifestations of SLE include pericarditis and pericardial effusion as seen in our patient, along with myocarditis, endocarditis and conduction abnormalities⁶⁻⁷. In connective tissue disorders, effusions are most typically caused by inflammatory cells infiltrate and immune complex deposition within the cardiac tissue causing serous and serosanguinous exudates encompass the heart⁸⁻⁹. This pericarditis and effusion can be significant, but rarely causes pericardial tamponade¹⁰. Our patient presented with the non-specific symptoms of positional chest pain and dyspnea on exertion. Examination revealed tachycardia, tachypnea, hypotension, increased jugular venous pressure and distant heart sounds, leading to the diagnosis of cardiac tamponade. Electrocardiography demonstrated sinus tachycardia, electrical alternans (an alternating QRS amplitude with every other beat) and low voltage, features strongly suggestive of pericardial effusion and tamponade¹¹⁻¹². Chest radiography showed an enlarged cardiac silhouette and a left sided infiltrate, a combination reported to have a strong positive predictive value for pericardial effusion.¹³ Echocardiography

should be performed if possible, not only because it is the standard to confirm cardiac tamponade.¹⁴ But as it can also grade and localize the pericardial effusion, detect pericardial thickening and visualize intrapericardial adhesions. In our patient echocardiography clearly visualized a large circumferential pericardial effusion with characteristic signs of tamponade and also confirmed a left-sided pleural effusion. Within the pericardial effusion, there were partially attached mobile fibrinous strands traversing the visceral and parietal pericardium. This visually dramatic feature has been reported in similar SLE cases and may be a harbinger of difficult pericardiocentesis¹⁵⁻¹⁷.

Few studies have examined cardiac involvement in SLE and cardiac tamponade in these patients has not been well-defined. In a 10-year retrospective single center study, Oshiro et al. examined 31 patients diagnosed with SLE¹⁸. It was found that 13 patients (42%) had cardiac involvement and 2 patients presented with cardiac tamponade (6%). A more recent multicenter cross-sectional study of 155 SLE patients reported the initial manifestation of cardiac tamponade in 2 cases (1.3%)¹⁹. This latter figure is consistent with findings SLE where it is reported 1% of patients present in this way²⁰. The much higher incidence reported by Oshiro et al. was likely influenced by the composition of their sample which comprised mainly African-Americans, who are known to have more severe disease.

Follow up is essential to exclude recurrent pericardial effusions and pericardial thickening. In this patient both the erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) level were elevated. While an elevated ESR is common during a flare, CRP is often normal or mildly elevated. Serositis is one of the

few manifestations of SLE that causes both an elevated CRP level and ESR.

The Systemic Lupus International Collaborating Clinics (SLICC)²¹ recently proposed classification criteria addressing perceived weaknesses of the 1997 American College of Rheumatology (ACR) classification criteria²². Using the SLICC criteria, our patient was diagnosed with SLE. As seen in our patient, low complement levels have been reported as one of the more frequently seen immunologic factors found at presentation in SLE²³. The SLICC criteria have also allowed anti-dsDNA antibodies, anti-Sm antibodies and antiphospholipid. antibodies to contribute individually to the diagnosis. Atypical presentation is common in SLE and often leads to major diagnostic delay. By allowing for greater weighting of immunologic criteria the use of the SLICC criteria may be more sensitive for diagnosis in these cases, potentially leading to earlier diagnosis and treatment.

Conclusion

Cardiac tamponade as the initial presentation of SLE is rare. More females than males presented in this way, and common co-existing findings included pleuritis and/ or pleural effusion, hematologic abnormalities and low serum complement levels. Physicians must consider SLE in the differential diagnosis of pericarditis and cardiac tamponade and perform appropriate testing for rheumatologic disease.

Consent

Informed consent was obtained from the parent of the patient for publication of this Case Report. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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