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Original Article

To Determine the Frequency of Urinary Tract Infection in Women with Preterm Premature Rupture of Membranes

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ABSTRACT

Preterm labor affects around thirteen million of births worldwide annually and is more observed in developing nations as compared to developed world. While 2 to 3% of pregnancies develop preterm premature rupture of membranes (PPROM) that result in increased morbidity and mortality of mother and child. Pregnancy induced hypertension and ante partum hemorrhage remained other important factors to develop preterm labor. Once diagnosed, needs expert consultation and management. **Objective:** To determine the frequency of urinary tract infection(UTI) in women with preterm premature rupture of membranes. **Methods:** This Cross Sectional study was done in department of Obstetrics and Gynecology, ATH, Abbotabad. From 30th August 2019 to 29th February 2019. We included 202 patients fulfilling the inclusion criteria. Informed consent was taken. The data were collected on prepared proforma. **Results:** In our study 202 patients with mean age of 25.93 ± 4.70 years were included. Mean gestational age was 33.09 ± 1.69 weeks. Mean parity was 2.36 ± 0.92. In our study, frequency of urinary tract infection (UTI) in women with PPROM was found in 09 (4.46%) patients. **Conclusion:** This study concluded that frequency of UTI in women with PPROM was found in 4.46% patients.

INTRODUCTION

PPROM and idiopathic preterm labor are the most common cause of preterm labor. Cesarean section as preferred mode to deliver baby, especially for very preterm infant age less than 30 weeks gestation . Preterm labor may be prevented in patient at high risk specially those who had already history of preterm delivery by taking some general and some specific measure in antenatal period. So poorly formed uterine segment, increased operative hemorrhage and infections are related with increase maternal morbidity and mortality. PPROM needs aggressive management if there is active labor, abruptio placenta or clinical evidence of maternal fetal infection [1]. The use of amniocentesis to detect covert or occult intra amniotic infection is in practice but still controversial. One of the main risks associated with PPROM is UTI. It is most commonly results due to catheterization and repeated vaginal examination. UTI may manifest as asymptomatic defined as presence of >10 5 bacteria per ml within the urinary specimen in asymptomatic patient. Symptomatic UTI is defined as presence of >100 bacteria/ml and pus cells >5/ml along with urinary symptoms of frequency, urgency and/or burning micturition [2]. Asymptomatic and symptomatic bacteriuria are found in 13% and 17.9% of pregnant women respectively. UTI is more in pregnant women [3]. Any gravid

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with preexisting renal disease is more prone to develop UTI. Colonization of vagina and preuretheral region with enterobacteriacae and gram positive organisms is the initial step. Changes at the level of urinary tract during pregnancy make it more likely that asymptomatic bacteriuria will progress to symptomatic UTI [4]. As in the absence of treatment may lead to pyelonephritis. There is paucity of local data, so the objective of our study is to determine the frequency of UTI in women with preterm premature rupture of membranes.

METHODS

This Cross Sectional study was done in department of obstetrics and gynecology, ATH, Abbottabad. From 30th August 2019 to 29th February 2019**.** By taking expected percentage of UTI as 3.4% with confidence level of 95% and margin of error 2.5% size of sample was 202 was calculated [5]. We included 202 patients fulfilling the inclusion criteria using Non-Probability, Consecutive Sampling. All the full term pregnant patients admitted in gynae and obs. unit of age 18 to 40 years and gave informed consent. We included gravida with Gestational age 30-36 weeks on LMP, parity 0-4 and PPROM as per operational definition. We Excluded patient with history of hypertension, diabetes and those who refused informed consent. The data were collected on prepared proforma from the prepared list. We enrolled 202 patients meeting the criteria from department of obstetrics and gynecology, ATH, Abbotabad were included in the study. Permission from ethical committee and research department of CPSP was taken. Informed consent was taken by explaining benefits of the study. Basic demographics (age, gestational age, parity, residential status (rural/urban) and weight on weighing machine) was recorded. Urine sample from all women was collected and sent to same hospital laboratory for urine test. Data were collected on proforma. Data were analyzed on SPSS-version-22. Frequency and percentage was computed for qualitative variables like residential status and urinary tract infection. Mean ± SD was presented for quantitative variables like age, gestational age, parity and weight. Effect modifiers like age, gestational age, parity, residential status and weight was controlled by stratification. Chi square test was applied and $p \leq 0.05$ was considered significant

RESULTS

Age range in this study was from 18 to 40 years with mean age of 25.93 ± 4.70 years. Majority of the patients 162 (80.20%) were between 18 to 30 years of age. Gestational age varies 30 to 36 weeks with mean of 33.09 ± 1.69 weeks as shown while mean parity was 2.36 ± 0.92 . Mean weight was 68.70 ± 11.30kg as shown in table 1.

Variables	Range	Mean ± SD
Age (years)	18-40	25.93 ± 4.70
Gestational age (weeks)	30-36	33.09 ± 1.69
Parity	0-4	2.36 ± 0.92

Table 1: Distribution of demographic and clinical characteristics of the study sample

In our study, frequency of UTI in women with PPROM was found in 09(4.46%) patients as shown in figure 1.

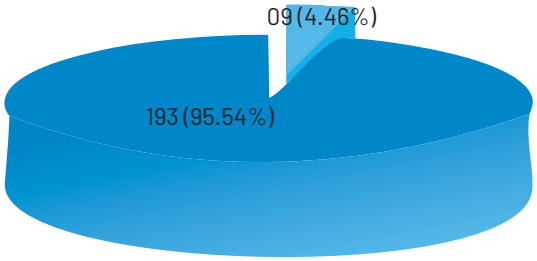

Figure 1: Frequency of UTI in women with PPROM (n=202)

Stratification of UTI with respect to age groups that shows more in age group of 30-50 years (55%) and gestational age of 30-33 weeks has more cases (66%). In our study UTI was more observed in patients with higher parity of 3-4(55%). Higher weight patient developed more UTI (88%) and patients with urban background developed more (88%) shown (Table 2).

Variables	Urinary tract infection		p –value
	Yes	No	
Age (years)			
30-50	5	157	0.058
51-71	4	36	
Gestational age (weeks)			
30-33	06	106	0.488
34-36	3	87	
Parity			
0-2	4	115	0.36
3-4	5	78	
Weight (kg)			
60	1	61	0.193
>60	8	132	
Place of living			
Rural	1	53	0.279
Urban	8	140	

Table 2: Frequency of UTI by various patients characteristics

DISCUSSION

PPROM is one of main factor for premature delivery of baby and associated with high morbidity and mortality of mother as well as child. It can be avoided by adopting certain measure like bed rest , avoidance of strenuous activities

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and coitus. Patient should be aware to symptoms like lower abdomen pain, change in the character of vaginal discharge and increase amount of fluid. PROM is multifactorial; very few literatures was published locally. Infection is one of the most common factors in development of PROM. Studies have shown that race specific risk for African American are at higher risk for developing PROM. Evidence support the prophylactic use of antibiotics in women. Aggressive management is employed when delivery is necessary and management is case specific. There was variation of choice and duration of antibiotics associating upper genital tract infections with PROM. Neonatal survival after 30 completed weeks is more than 95%. Testing for lung maturity in women with PROM has positive predictive value. In our study age varies from 18 to 40 years while major group is between 18 to 30 years. In our study UTI was found in 09 women with preterm premature rupture of membranes with frequency of 4.46%. In a study by Hackenhaar *et al.*, has showed that frequency of UTI was 3.4%in women with PROM [5]. Another study by de Vasconcelos-Pereira *et al.*, has showed that frequency of UTI was 6.7%inwomen with PROM [6]. In a case-control study done by Farzaneh *et al.*, observed 112 patients with preterm labor and 112 patients in the control group were at term. 33 of them developed asymptomatic bacteriuria in the preterm labor group while only 6 in control group with p-value < 0.05 which shows relevant correlation between asymptomatic bacteriuria and preterm labor [7]. Similar findings of another study by Verma *et al.*, showed preterm labor is associated with urogenital infections [8]. Chhabra and Patil reported women with preterm labor with cervical colonization and UTI [9]. McPheeters *et al.*, observed UTI in women with preterm labor 17.1 % vs 10.9% without preterm labor [10]. Bacteriuria is associated results higher preterm delivery rate as compared to without bacteriuria. Romero *et al.*, found that acute pyelonephritis is the major concern for majority of complications during pregnancy and can be addressed at asymptomatic stage [11]. Findings were also consistent in study by Kinningham, while study by Kass *et al.*, reported that preterm birth of child was result of bacteriuria as observed in animal model [12, 13]. Patterson and Andriole found that bacteriuria is responsible for chorio-amnionitis that result in initiation of preterm labour [14]. In study done by Bhalla *et al.*, prevalence of UTI with respect to place of living, more cases were seen in urban compared to rural (38.6% vs 28.8%), this finding is consistent with our study where 8 cases were in urban 1 in rural [15]. Tiemstra *et al.*, showed the prevalence of infection seen as 17.3% higher number may be large sample size [16]. Morgan observed similar trend of UTI in preterm labor after premature rapture of membrane. The findings were also consistent with Muglia and Katz observation in their study [17, 18]. UTI if not treated properly then it will develop pyelonephritis that may prove as nightmare for pregnant women. If left untreated, UTI can lead to, preterm labor or infection in the newborn as shown in studies by Sheiner *et al.*, and Pararas *et al.*, also found the same observations that infection is more relevant to PPROM [19, 20].

CONCLUSIONS

Our study showed that frequency of UTI in women with preterm premature rupture of membranes was found in 4.46% patients. So, we recommend that early and proper management of UTI whether symptomatic or asymptomatic can be undertaken in order to reduce the incidence of PPROM as well as it is associated morbidity and mortality of both mother and fetus.

Conflicts of Interest

The authors declare no conflict of interest

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REFERENCES

[1] Endale T, Fentahun N, Gemada D, Hussen MA. Maternal and fetal outcomes in term premature rupture of membrane. World Journal of Emergency Medicine. 2016; 7(2): 147-152. doi: 10.5847/wjem.j.1920-8642.2016.02.011.

[2] Tsiartas P, Kacerovsky M, Musilova I, Hornychova H, Cobo T, Sävman K,*et al*. The association between histological chorioamnionitis, funisitis and neonatal outcome in women with preterm prelabor rupture of membranes. The Journal of Maternal-Fetal & Neonatal Medicine. 2013 Sep; 26(13): 1332-6. doi: 10.3109/14767058.2013.784741.

[3] Ericson JE and Laughon MM. Chorioamnionitis: implications for the neonate. Clinics in Perinatology. 2015 Mar; 42(1): 155-65. doi: 10.1016/j.clp.2014.10.011.

[4] Practice Bulletin No. 139: premature rupture of membranes. Obstetrics and amp; Gynecology. 2013 Oct; 122(4): 918-30. Available from: http://dx.doi.org/10.1097/01.aog.0000435415.21944.8f.

[5] Hackenhaar AA, Albernaz EP, Fonseca T. Preterm premature rupture of the fetal membranes: association with sociodemographic factors and maternal genitourinary infections. Jornal de Pediatria. 2014 Mar; 90(02): 197-202. doi: 10.1016/j.jped.2013.08.003.

[6] de Vasconcelos-Pereira EF, Figueiró-Filho EA, de Oliveira VM, Fernandes AC, de Moura Fé CS, Coelho LR, *et al*. UTI in high risk pregnant women. Infection.

DOI: https://doi.org/10.54393/pjhs.v4i01.470

2013 Mar; 7(25): 27-30. doi: 10.5216/rpt.v42i1.23590.
[7] Farzaneh F, Mokhtari M, Kalemati E. Comparison of the Frequency Asymptomatic Bacteriuria in Patients with Preterm Labor and Term. Zahedan Journal of Research in Medical Sciences. 2018 Jun; 20(6): e67975. doi: 10.5812/zjrms.67975.
[8] Verma I, Avasthi K, Berry V. Urogenital infections as a risk factor for preterm labor: a hospital-based case–control study. The Journal of Obstetrics and Gynecology of India. 2014 Aug; 64(4): 274-8. doi: 10.1007/s13224-014-0523-6.
[9] Chhabra S and Patil N. Study of factors causing and arresting preterm labour. Journal of Obstetrics and Gynecology of India. 2001 Aug; 51(04): 99-103.
[10] McPheeters ML, Miller WC, Hartmann KE, Savitz DA, Kaufman JS, Garrett JM, *et al*. The epidemiology of threatened preterm labor: a prospective cohort study. American Journal of Obstetrics and Gynecology. 2005 Apr; 192(4): 1325-9. doi: 10.1016/j.ajog.2004.12.055.
[11] Romero R, Oyarzun E, Mazor M, Sirtori M, Hobbins JC, Bracken M. Meta-analysis of the relationship between asymptomatic bacteriuria and preterm delivery/low birth weight. Obstetrics & Gynecology. 1989 Apr; 73(4): 576-82.
[12] Kiningham RB. Asymptomatic bacteriuria in pregnancy. American Family Physician. 1993 Apr; 47(5): 1232-8.
[13] Kass EH. Hormones and host resistance to infection. Bacteriological Reviews. 1960 Mar; 24(1): 177-85. doi: 10.1128/br.24.1.177-185.1960.
[14] Patterson TF and Andriole VT. Bacteriuria in pregnancy. Infectious Disease Clinics of North America. 1987 Dec; 1(4): 807-22. doi: 10.1016/S0891-5520(20)30151-3.
[15] Bhalla P, Chawla R, Garg S, Singh MM, Raina U, Bhalla R, *et al*. Prevalence of bacterial vaginosis among women in Delhi, India. Indian Journal of Medical Research. 2007 Feb; 125(2): 167-72.
[16] Tiemstra JD, Chico PD, Pela E. Genitourinary infections after a routine pelvic exam. The Journal of the American Board of Family Medicine. 2011 May; 24(3): 296-303. doi: 10.3122/jabfm.2011.03.110009.
[17] Morgan KL. Management of UTIs during pregnancy. MCN: The American Journal of Maternal/Child Nursing. 2004 Jul; 29(4): 254-8. doi: 10.1097/00005721-200407000-00011.
[18] Muglia LJ and Katz M. The enigma of spontaneous preterm birth. New England Journal of Medicine. 2010 Feb; 362(6): 529-35. doi: 10.1056/NEJMra0904308.
[19] Sheiner E, Mazor-Drey E, Levy A. Asymptomatic bacteriuria during pregnancy. The Journal of Maternal-Fetal & Neonatal Medicine. 2009 Jan; 22(5): 423-7. doi: 10.1080/14767050802360783.
[20] Pararas MV, Skevaki CL, Kafetzis DA. Preterm birth due to maternal infection: causative pathogens and modes of prevention. European Journal of Clinical Microbiology and Infectious Diseases. 2006 Sep; 25(9): 562-9. doi: 10.1007/s10096-006-0190-3.