ORIGINAL ARTICLE

Prevalence of Vaginal Infections in Preterm Labour

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ABSTRACT

Objective: The purpose of this study is to determine the association of vaginal infection in preterm deliveries.
Study Design: Retrospective/prospective study
Place and Duration: Gynaecology and Obstetrics department of MSF Women's Hospital Peshawar and King Abdullah Teaching Hospital, Mansehra for the duration of six months form August 2021 to January 2022.
Methods: Total 76 females with ages 18-(42) years were presented in this study. After receiving informed written consent, detailed demographic information about the enrolled patients, such as age, body mass index, domicile, and educational status, was recorded. Gravidity status and history of preterm deliveries were also assessed among all cases. Association of microorganisms was diagnosed by taking high vaginal swab and sent for test in bio lab. Prevalence of vaginal infections and risk factors were calculated. SPSS 23.0 was used to analyze all data.
Results: Among all, 40 (52.6%) were ages between 18-28 years, 22 (28.9%) had age 29-38 years and 14 (18.4%) patients were aged between 39-48 years. Majority females 55 (72.4%) had BMI <25kg/m^2 and 21 (27.6%) had BMI >25kg/m^2. As per socio-economic status, 44 (59.2%) cases had poor, 20 (26.3%) cases had middle and 12 (15.8%) patients were from upper class. There were 27 (35.5%) patients had history of preterm deliveries. Frequency of vaginal infections was found in 28 (36.8%) cases. UTI was found in 22 (28.9%) patients. Among HVS culture test, candida found in 25 (35.9%) patients. E.coli was the most common micro-organism found in 10 (13.2%) patients.
Conclusion: This study led us to the conclusion that vaginal infections greatly contribute to the unnecessary causes of premature labour. Screening for asymptomatic genitourinary infections in pregnant women is always a good idea. Early diagnosis and timely treatment of vaginal infections help reduce preterm labour and the related neonatal morbidity and mortality of premature newborns.
Keywords: Vaginal Infections, UTI, Preterm Delivery, E.coli

INTRODUCTION

Nearly half of all long-term neurological morbidity and roughly 70% of newborn fatalities are caused by the difficulties of preterm birth (PTB) [1, 2]. The clinical manifestation of PTB may be divided into three groups: preterm premature rupture of the membranes (PPROM), medically induced PTB (M-PTB), and spontaneous preterm labour (PTL) leading to spontaneous PTB (S-PTB) [3]. The healthcare system is unable to identify and effectively treat pertinent risk factors since not all contributing causes of S-PTB have been recognised [4].

One of the major risk factors for pregnancy problems, including preterm labour, preterm delivery, preterm birth, and perinatal infections, has been suggested to be intrauterine infection. Invasive procedures like amniocentesis, percutaneous foetal blood sampling, chorionic villous sampling, or shunting can accidentally introduce microorganisms into the amniotic cavity and the developing foetus [5]. Other possible entry points include retrograde seeding from the peritoneal cavity through the fallopian tubes and hematogenous dissemination through the placenta.[5] The amniotic cavity, which is typically sterile, has been the focus of the majority of investigations on the detection of infection in patients who underwent PTL and premature birth. Any discovery of a microbe in the amniotic fluid is therefore proof of microbial invasion. Ascending is the most typical route for intrauterine infection [6].

Bacterial vaginosis (BV), which affects 15–42% of expectant mothers [8], has been linked to an increased risk of PTB and spontaneous PPROM by a factor of four [9]. Untreated BV infection groups had a greater risk of PTB than groups of pregnant women under 20 weeks of gestation with intermediate and normal bacteria [7]. Additionally, it has been shown that BV can harm newborns by increasing the risk of postpartum infection [9] and causing low birth weight [9]. The prevalence of Fusobacterium sp. (21%), Mubiluncus mulieris (18.4%), and Mycoplasma hominis was shown to be greater in preterm women compared to their term counterparts in a 2019 research (p 0.0001). [10]. In addition, it was shown that 200 preterm labouring women had a 5% prevalence of Trichomonas vaginalis infection while 200 non-

preterm labouring women had a 1% prevalence of this infection. Preterm labour and Trichomonasis were statistically significantly associated (sig. = 0.0062, p 0.01) [11]. The total rate of PTB in Vietnam was estimated to be 5-9% in 2014 by a systematic study [11]

Infections include herpes simplex virus type-2 (HSV-2) [12], Trichomonas vaginalis, Neisseria gonorrhoeae, and human immune deficiency virus (HIV) [13] are more common in women with altered vaginal flora, such as BV. The most common non-viral sexually transmitted disease globally, TV is caused by Trichomonas vaginalis, which is thought to cause 180 million infections annually [14]. The parasite is often located in the periurethral gland, cervix, and vagina [15]. About 25% of female TV infections are asymptomatic [15]. The signs and symptoms of symptomatic individuals include vulvovaginal erythema, dysuria, pruritus, edoema, foamy yellow-gray or green vaginal discharge, and an increased pH (> 6).

Therefore, the purpose of the current study was to investigate how vaginal infections may contribute to premature labour. The primary goal is to investigate the connection between vaginal infections and premature labour.

MATERIAL AND METHODS

This retrospective/prospective study was conducted at Gynaecology and Obstetrics department of MSF Women's Hospital Peshawar and King Abdullah Teaching Hospital, Mansehra for the duration of six months form August 2021 to January 2022 and comprised of 76 females. After receiving informed written consent, detailed demographic information about the enrolled patients, such as age, body mass index, domicile, and educational status, was recorded. Women whom were 37 weeks pregnant, those who have APH, PROM, or IUDs, and those did not provide written consent were not included.

Only pregnancies between 28 and 37 weeks of gestation with spontaneous preterm labour were included in this study. Based on the most recent period and a dating scan, gestational age was calculated. The trial recruited women between 28 and 37 full weeks of pregnancy who experienced uterine contractions of 4 in

20 minutes or 8 in 60 minutes along with cervical dilatation of 1 cm and effacement of >80%. someone whose pregnancy was terminated prematurely for either maternal or foetal reasons.

Among the risk factors for the index pregnancy are genitourinary and respiratory infections, GDM, anaemia, hypertensive disorders, heart disease or any other medical condition, as well as obstetric hazards such hydramnios, multifetal gestation, malpresentation, and uterine abnormalities. It was done to measure the cervical length and dilatation during the per vaginal examination. The placenta was localised and separated, and CBP, CUE, Obstetric Ultrasound for cervical length, AFI, and EFW were all performed. Gram staining and culture sensitivity tests were performed on a swab from the posterior fornix of the vagina. A midstream urine sample was sent for culture and sensitivity testing. The Department of Microbiology at our institute conducted microbiological analysis and antibiotic sensitivity testing on urine and high vaginal swabs. All patients were kept under observation for signs of sepsis, such as fever, maternal tachycardia, uterine discomfort, and discharge with an unpleasant smell. SPSS 23.0 was used to analyze all data.

RESULTS

Among all, 40 (52.6%) were ages between 18-28 years, 22 (28.9%) had age 29-38 years and 14 (18.4%) patients were aged between 39-48 years.(Figure 1) Figure-1: Age of the presented patients
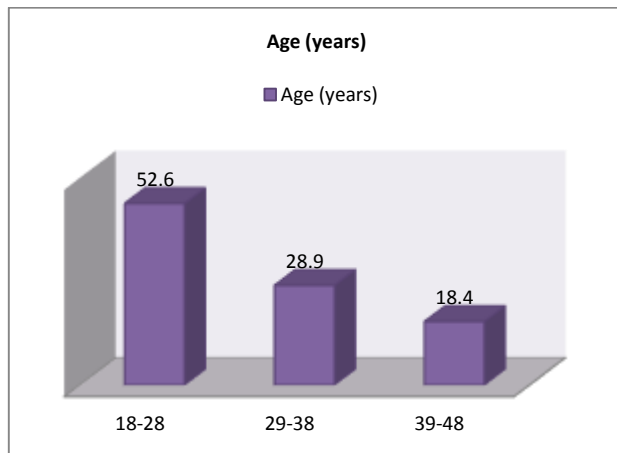

Majority females 55 (72.4%) had BMI <25kg/m^2 and 21 (27.6%) had BMI >25kg/m^2. As per socio- economic status, 44 (59.2%) cases had poor, 20 (26.3%) cases had middle and 12 (15.8%) patients were from upper class. There were 27 (35.5%) patients had history of preterm deliveries.(table 1)

Table-1: Included patients with detailed demographics

Variables	Frequency	Percentage
BMI		
<25kg/m^2	55	72.4
>25kg/m^2	21	27.6
Socio-economic status		
Poor	44	59.2
Middle	20	26.3
Upper	12	15.8
History of preterm		
Yes	27	35.5
No		64.5

Frequency of vaginal infections was found in 28 (36.8%) cases.(figure 2) Figure-2: Frequency of vaginal infections
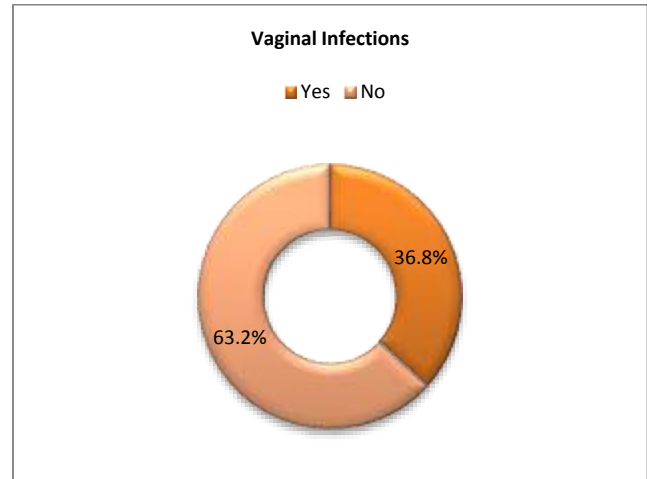
UTI was found in 22 (28.9%) patients. Among HVS culture test, candida found in 25 (35.9%) patients, Staphylococcus aureus in 2 (2.6%) and mix microbes in 1 (1.3%) E.coli was the most common micro- organism found in 10 (13.2%) patients.(table 2)

Table-2: Frequency of UTI and micro-organisms

Variables	Frequency	Percentage
UTI		
Yes	22	28.9
No	44	71.1
HVS outcomes		
candida	25	35.9
Mix microbes	1	1.3
Staphylococcus aureus	2	2.6
Microorganisms		
E.coli	10	13.2
Klebsiella	6	7.9
S.aureus	8	10.5
Acinetobacter	2	2.6

DISCUSSION

It has received a lot of attention [16] that PTB is causally related to alterations in vaginal flora during pregnancy. Despite the fact that this disease is rather widespread, the pathogenic process that causes S- PTB is still not fully understood. Abnormal vaginal tract flora in pregnant women is particularly challenging to define. Because bacteria usually present in the lower vaginal tract are those that are most frequently isolated from patients with intrauterine infections, researchers believe that the pathogenic function of particular microorganisms in the vagina as risk factors for S-PTB varies. In addition to technical aspects like detection technique and sample place, each individual's internal and external circumstances may also have an impact on the colonisation rate of microbes in the vagina [17]. It's also possible that the typical vaginal microbiota varies racially or ethnically. Usui et al. [18] said that the lack of vaginal lactobacilli was a stronger predictor of S-PTB at 33 weeks of gestation than the presence of M. hominis, but that this predictor's sensitivity and positive predictive value were only 28% and 25%, respectively. According to Breugelmans et al. [19], there was a substantial increase in the risk of S-PTB when Ureaplasma species were present in an aberrant vaginal flora, but there was no significant link between the presence of abnormal vaginal flora and the development of S-PTB.

In current study 76 females with ages 18-48 years were presented. Among all, 40 (52.6%) were ages between 18-28 years, 22 (28.9%) had age 29-38 years and 14 (18.4%) patients were aged between 39-48 years. In contrast, Samim A. et al2006 .'s

study among Iraq found that 36.5% of preterm births occurred in women who were at the very young or very old ends of the reproductive age spectrum.[20] Majority females 55 (72.4%) had BMI <25kg/m^2 and 21 (27.6%) had BMI >25kg/m^2. As per socio-economic

status, 44 (59.2%) cases had poor, 20 (26.3%) cases had middle and 12 (15.8%) patients were from upper class. There were 27 (35.5%) patients had history of preterm deliveries. These were comparable to the studies conducted in past.[21,22]

Frequency of vaginal infections was found in 28 (36.8%) cases. In the study conducted by Pradeep Raju S et al, women who were having preterm labour had a vaginal infection rate of 58.06%. [23] According to Fernandes F et al's study, which revealed an incidence of 8.29%, the incidence of vaginal infections was high. [24] The prevalence discovered in this study, however, was somewhat greater than 26.0 and 30% in Ibadan and Newi Town of Anambra State, both in Nigeria [25,26]. These investigations were also done among pregnant women. In Kumasi, a lower rate of 21% was noted among women visiting a gynaecological clinic [27], while in Burkina Faso, a prevalence of 22.7% was noted among pregnant women [28].

In current study, UTI was found in 22 (28.9%) patients. Among HVS culture test, candida found in 25 (35.9%) patients, Staphylococcus aureus in 2 (2.6%) and mix microbes in 1 (1.3%) E.coli was the most common micro-organism found in 10 (13.2%) patients. Candida spp prevalence was 12.5% in a comparable research among pregnant women in the United Kingdom as opposed to 36.5% in our study [29]. This gap in occurrence may result from poor sanitary conditions in many rural areas, such as Kintampo, as compared to the United Kingdom. The enormous differences in the prevalence rate between nations are explained by local population dynamics and risk factors for infection. The fact that the research subjects were pregnant may have contributed to the significant Candida spp colonization/

infection of their vagina. Pregnancy has a significant impact in colonisation and infection, even though 20 to 50% of women harbour candida species without exhibiting symptoms. In contrast to non-pregnant women, pregnant women frequently have Candida spp. colonise their vagina, according to a research by Leli et al. [30].

CONCLUSION

This study led us to the conclusion that vaginal infections greatly contribute to the unnecessary?? causes of premature labour. Screening for asymptomatic genitourinary infections in pregnant women is always a good idea. Early diagnosis and timely treatment of vaginal infections help reduce preterm labour and the related neonatal morbidity and mortality of premature newborns.

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