

Factors Associated with Puerperal Sepsis

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ABSTRACT

Aim: To determine the frequency of factors associated with puerperal sepsis at tertiary care Hospital.

Study design: Cross sectional study.

Place and duration of study: Department of Obstetrics & Gynecology, Liaquat University Hospital Hyderabad from 1st August 2022 to 31st January 2023.

Methodology: One hundred and fifty women of puerperal sepsis were enrolled. A detailed medical history, clinical examination and baseline equitable investigations including CBC, blood urea, creatinine and virology of all patients were done. The outcome variable i.e. cesarean section, postpartum hemorrhage, anemia, prolong labor, frequent vaginal examination and prolong rupture of membrane were noted.

Results: The mean age was 27.5±7.5 years. Among factors associated with puerperal sepsis, most common factor observed was anemia 104 (69.5%) followed by PPH 89 (57.3%), frequent vaginal delivery 77 (51.3%), prolonged labor and prolonged rupture of membrane 74 (49.3%) each and c-section 32 (21.3%), cases.

Conclusion: The factors associated with peripartum sepsis included mode of delivery, postpartum hemorrhage, prolonged labor, and anemia.

Keywords: Puerperal sepsis, Mode of delivery, Risk factors

INTRODUCTION

Puerperal sepsis/pyrexia typically exhibits fever as well as other symptoms such pelvic pain, unpleasant vaginal discharge, and postponed uterine size reduction.¹ Worldwide, 6 million people develop peripartum sepsis and about 77,000 mothers die from it.² The WHO reports that 358,000 maternal deaths occur annually due to birth problems, and up to 15% of these are related to perinatal sepsis.³ Puerperal sepsis is one of the most preventable problems not only in developing countries but also in developed countries, being one of the leading causes of maternal morbidity and mortality.⁴ Sepsis should be considered a syndrome rather than a disease, resulting from multiple insults ranging from Systemic Inflammatory Response Syndrome (SIRS), including but not limited to infectious agents. It can worsen in severe sepsis and septic shock.⁵

Risk factors for infection include poor hygiene practices during labor and delivery^{5,6}. It is associated with frequent manipulation of patients during delivery, prolonged labor or rupture of amniotic sacs, as well as poor sanitation and poor services within health care facilities^{6,7}. Some previous studies reported that low standard of personal hygiene, maternal care, poverty, lack of knowledge about the use of available health care facilities, unplanned pregnancy, unnecessary induction and unskilled persons³.

Another study reported that poor antenatal clinic attendance, non-adherence to asepsis during delivery/prolonged rupture of membranes, retention of products of conception and anemia in pregnancy were associated with peripartum sepsis^{8,9}.

A study conducted in Tanzania by Kajeguka et al¹⁰ observed that prevalence of puerperal sepsis (11.5%) and the most common factors of puerperal sepsis were cesarean section (66.7%), postpartum hemorrhage (57.1%), anemia (61.9%) and prolong labor (76.2%). Similarly, another study conducted in Pakistan by Madhudas et al¹¹, revealed that over the study period patients presented with puerperal sepsis 6.28%, risk factors of puerperal sepsis in patients were anemia (100%), frequent vaginal examination (56.08%), prolong rupture of membrane (48.26%) and prolong labor (46.52%).

The purpose of this study was to assess the frequency of factors associated with puerperal sepsis at tertiary care Hospital. This study explored the facts behind occurrence of puerperal

sepsis at local level, the factors which will be regarded as high risk factors. By this preventive strategies can be planned to decrease the maternal morbidity and mortality due to puerperal sepsis. The results of the study add valuable contribution to the existing pool of knowledge on the factors associated with puerperal sepsis. As our country has a different ethnically, educationally, geographically, socioeconomically, environmentally and poverty level, so we may get different results in our population.

MATERIALS AND METHODS

This study is a cross-sectional study conducted during the time period of 1st August 2022 to 31st January 2023 in Obstetric Gynaecology at Liaquat University of medical and health sciences hospital Hyderabad. All the pregnant females of 18-40 years of age presenting with clinical signs such as pelvic pain (>4 on visual analogue scale), fever (temperature of temperature ≥ 100.3°F or higher on any occasion), foul smelling of vaginal discharge, slow reduction of the size of uterus (diagnosed clinically) within 42 days of postpartum. A written informed consent was taken from all the cases or their attendants. A detailed medical history, clinical examination and baseline equitable investigations including CBC, blood urea, creatinine and virology of all patients were done. Women not willing to participate in the study, women with fever during pregnancy or 42 days after delivery or caesarean and section, women presenting with fever due to malaria or typhoid were excluded. The lead researcher completed all of these tasks (history taking, clinical examinations, intervention, and data collecting) while being supervised by the senior obstetrician of the ward who has at least five years of obstetric expertise.

RESULTS

The mean age was 27.5±7.5 years, mean height was 1.7±0.1 meter, mean weight was 163.6±83.87 kg, mean body mass index was 30.35±6.72 kg/m², mean parity was 5±4 and mean duration of labour was 12±5.68 hours. One hundred and eleven (74%) were urban resided and 39(26%) were rural resided. Thirty seven (25%) were booked cases and 113(75%) were un-booked cases. Ninety nine (66%) were poor, 49(32.6%) belonged to middle class and 2 (1.3%) belonged to high class. Nineteen (12.6%) were working women and 131(87.3%) were housewife. Most of the women were primary pass 90(60%), followed by matric pass 45(30%), intermediate and graduate 7(4.2%) each and 1(0.6%) were above graduate 23(15%) were primipara, 9(6%) were multipara and

Received on 02-02-2023

Accepted on 06-04-2023

118(78.6%) were grand multipara. Twenty four (16%) had membrane intact and in 126(84%), the membrane was absent. Ninety (60%) had spontaneous onset of labor and 60(40%) had labor after induction. 39 (26%) had duration of labor 12 hours, 105(70%) had duration of labor between 12-24 hours and 6(4%) had >24 hours. 90 (60%) delivered through NVD, 28(19%) had instrumental delivery and 32(21.3%) delivered through c-section (Table 1).

Among factors associated with puerperal sepsis, most common factor observed was anemia 104(69.5%) followed by PPH 89(57.3%), frequent vaginal delivery 77(51.3%), prolonged labor and prolonged rupture of membrane 74(49.3%) each and C-section 32(21.3%) [Fig. 1].

The associated factors of PS were also stratified with respect to age, BMI, residential status, booking status, parity, income status, educational status, working status, membrane status, duration of labor, mode of delivery, mode of onset of labor, place of delivery (Table 2).

Table 1: Demographic and descriptive information of the patients (n=150)

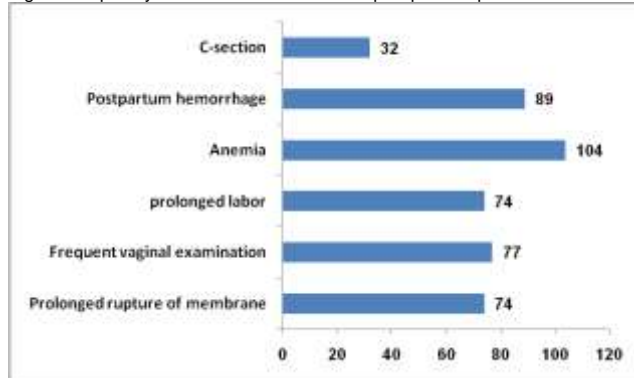
Variable	No.	%
Age (Years)	27.5±7.5	
Weight	163.6±83.87	
BMI	30.35±6.72	
Parity	5±4	
Duration of Labor	12±5.68	
Residential status		
Urban	111	74.0
Rural	39	26.0
Booking status		

Booked	37	25.0
Un Booked	113	75.0
Socioeconomic status		
Poor	99	66.0
Middle	49	32.6
Upper	2	1.4
Educational status		
Primary	90	60.0
Matric	45	30.0
Intermediate	7	4.6
Graduate	7	4.6
Graduate & Above	1	0.6
Occupational status		
Working	19	12.6
Non-Working	131	87.4
Parity		
Primipara	23	15.4
Multipara	9	6.0
Grand Multipara	118	78.6
Mode of onset of labor		
Spontaneous	90	60.0
Induced	60	40.0
Duration of labor (hours)		
12	39	26.0
12-24	105	70.0
>24	6	4.0
Mode of delivery		
NVD	90	60.0
Instrumental	28	19.0
C-section	32	21.0

Table 2: Factors associated with puerperal sepsis with respect to different variable

Variable	Factors						P value
	CS	PPH	Anemia	PL	FVE	PRM	
Age (years)							
18-30	21	51	80	59	61	54	<0.001
>30-40	13	38	24	15	16	20	
Body mass index (kg/m²)							
≤ 29	5	34	49	14	46	14	<0.001
>29	27	55	55	60	31	60	
Residential status							
Urban	27	60	85	59	61	59	0.114
Rural	05	29	19	15	16	15	
Booking status							
Booked	11	17	15	14	19	13	0.965
Un-booked	21	72	89	60	58	61	
Occupational status							
Working	15	11	11	10	10	11	0.247
House-wife	17	78	93	64	67	63	
Parity							
Primipara	15	21	19	15	17	14	0.003
Multipara	6	7	5	6	5	6	
Grandmultipara	11	61	80	53	55	54	
Membrane							
Intact	6	9	11	13	15	13	0.006
Absent	26	80	93	61	62	61	
Duration of membrane							
12	9	27	21	0	19	15	0.000
>12-24	19	59	78	105	53	54	
>24	4	3	5	6	5	5	
Mode of delivery							
NVD	0	40	50	35	46	35	0.002
Instrumental	0	21	26	21	14	21	
C-section	32	28	28	18	17	18	
Socioeconomic status							
Poor	2	40	63	42	42	40	0.000
Middle	28	47	39	30	32	32	
Upper	2	2	2	2	2	2	
Mode of onset of labor							
Spontaneous	5	34	49	14	46	14	<0.001
Induced	27	55	55	60	31	60	

Fig. 1: Frequency of factors associated with puerperal sepsis



DISCUSSION

Many factors were statistically linked to puerperal sepsis in this study, including the delivery method (caesarean section), postpartum haemorrhage, moderate to severe anaemia, and prolonged labour in the present study. Puerperal sepsis was substantially correlated with delivery method. According to data, mothers who gave birth via SVD were more likely to experience puerperal sepsis than mothers who gave birth via caesarean section. These findings differ from studies conducted in Ethiopia and Nigeria¹². Moreover, this differs from a study conducted in Uganda, which reported that cesarean delivery was independently associated with puerperal sepsis¹³. Contrary to a study conducted in Ethiopia, which found that women who underwent caesarean sections had a lower risk of developing puerperal sepsis than women who gave birth using SDV¹⁴. In this study, puerperal sepsis was linked to longer labour. According to a study by Demisse et al¹⁵, participants who had labours lasting 12 to 24 hours or longer than 25 hours had 3.1 and 4.7 times, respectively, the risk of developing puerperal sepsis compared to those who had labours lasting less than 12 hours.

The current study also showed that anaemia is one of the risk factors for puerperal sepsis. According to a study done in Kenya, anaemia is indirectly linked to both maternal mortality and puerperal sepsis¹⁶. Understanding how anaemia contributes to puerperal sepsis will require more study. The study offers important knowledge that is required for designing effective Reproductive Health Control Plans with the goal of lowering the prevalence and associated morbidity of puerperal sepsis among postnatal mothers receiving care at the hospital.

This study also showed that number of vaginal examinations also correlated with periperal sepsis, with 77(51%) cases having more than 5 vaginal examinations. This is consistent with a study conducted in Egypt that reported that more than 5 vaginal examinations may lead to the development of periporal sepsis^{17,18}. Similarly, a systematic review study conducted in South Asia has demonstrated that frequent vaginal examination with hands alleviates periperal sepsis¹⁹. A Kenyan study reported that women who had 2 or more vaginal examinations were 3.95 times more likely to have periapical sepsis²⁰. This repeated manipulation of the genital tract will facilitate the movement of microorganisms up the lower genital tract and increase the chances of developing peripural sepsis there.

In this study mothers 74(49.3%) of the women with puerperal sepsis had prolonged labor i.e. >12 hours. A summary of studies

from Kenya²⁰, Nepal²¹, and Tanzania²² concluded that the duration of labor contributes to the development of periperal sepsis because prolonged labor with frequent vaginal examination leads to periperal sepsis.

CONCLUSION

The factors which were associated with puerperal sepsis included the mode of delivery, Postpartum Haemorrhage, prolonged labour, and anaemia. However, it is recommended that further studies with larger sample size must be done in order to draw a concrete conclusion we recommend that the Pakistan Health Service should establish a surveillance system for maternal sepsis as a monthly reportable disease.

Conflict of interest: Nil

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