Original Research Article

An observational study of aetiology of preterm labour in a tertiary health care centre

Arshi Shaheen, Nidhi Chauhan, Alka Alka*, Ruchira Nautiyal

Department of Obstetrics and Gynecology, HIMS, Jollygrant, Dehradun, Uttarakhand, India

*Correspondence:
Dr. Alka Alka,
E-mail: alkadun2512@gmail.com

ABSTRACT

Background: Preterm labor and delivery are very challenging obstetric complications encountered by obstetrician as preterm births are the major cause of perinatal and neonatal morbidity and mortality.
Methods: An observational study was conducted in the Department of Obstetrics and Gynaecology, Himalayan Institute of Medical Sciences (HIMS), Jollygrant, Dehradun, over a period of one year in which 105 preterm pregnant were observed and risk factors associated with preterm labour were evaluated.
Results: Preterm labour was more common in multigravida as compared to primigravida. Maximum (58.10%) number of preterm birth occurred after 32 weeks of gestation. In previous history of pregnancy most important history was previous history of abortion than previous history of preterm labour. Previous one history of abortion was more commonly associated than previous history of 2 or more than 2 abortions. Preterm prelabour rupture of membranes was most important risk factor associated with preterm labour and delivery followed by UTI, than PIH and anemia being the 4th important reason.
Conclusions: Thus we concluded that various risk factors that lead to preterm labor are identifiable and mostly are modifiable. Therefore, preconceptional counseling has a great role to play in bringing down the incidence of preterm labour.

Keywords: Aetiology, Preterm labour, Delivery, Gynaecology

INTRODUCTION

Across 184 countries the prevalence of preterm birth is around 5 to 18% thus causing a global health problem.[1] Every year more than 15 million preterm babies are born among which 60-85% present in south Asian and African countries.[2] India is among the top ten countries in world which has highest rate of preterm deliveries. Approximately ¾th of fetal deaths occur in fetus that delivered at <37 weeks, and 40 percent among those delivered at <32 weeks.[3]

According to WHO if the delivery is occurring after the period of viability and before completing 37 weeks of gestation or 259 days since the first day of women's Last menstrual period than it is defined as preterm labour.[4] We classify preterm deliveries into two main groups. One is the delivery occurring after 28 weeks of gestation but before completing 34 weeks than it is known as early preterm and the other is delivery occurring after 34 weeks but before completing 37 weeks of gestation than it is known as late preterm. Four main reasons directly responsible for preterm labour are spontaneous unexplained preterm labour with intact membranes, Idiopathic preterm premature rupture of membranes (PROM), delivery for maternal and fetal indication, twins and higher order multifetal births.[5]

According to ACOG guidelines 2016, there are many warning sign which occur prior to preterm labour includes change in consistency or amount of vaginal discharge, pressure on lower abdomen, contraction of uterus occurring at regular interval frequently, tightening of uterus and backache.[6] According to ACOG, 1997 criteria

the definitive signs are uterine contractions occurring 4 in 20 minutes or 8 in 60 minutes and changes occurring in the cervix i.e.; there is dilatation of cervix more than 1 cm and effacement of cervix is equal to or more than 80%.[7]

The risk factors includes cervical insufficiency, pregnancy induced hypertension, malpresentation, anomalies of the uterus, twins or multiple fetus, previous scar on uterus, premature rupture of membrane, ante partum hemorrhage, gestational diabetes mellitus, oligohydromnios, polyhydromnios, UTI, chorioamnionitis, anaemia, Rh negative pregnancies, short interpregnancy interval, low BMI, hypothyroidism, previous history of abortion and preterm deliveries, congenital anomaly in baby etc.[8,9]

Very often the diagnosis of preterm labour is difficult and made at an advanced stage of labour. Therefore we have to predict the risk factor responsible for preterm labour at the earliest as early detection and treatment of modifiable risk factors can decrease maternal and neonatal morbidity and mortality.

METHODS

This observational study was conducted in the department of obstetrics and gynaecology, HIMS, Swami Rama Hospital, Dehradun, over a period of one year. Subjects with preterm labour were recruited from the patients presenting in gynaecology and obstetrics OPD, and IPD and emergency at HIMS, Dehradun after obtaining written informed consent.

Inclusion criteria

Women's who delivered in our institute after 28 weeks but before 37 completed weeks of gestation at the hospital were included.

Exclusion criteria

Patients with following criteria's were excluded- (a) false labor pains; and (b) with intra uterine fetal demise were excluded due to inadequate information.

Study protocol

The study included pregnant women between 28 weeks to 37 weeks of gestation who diagnosed to have pre-term labour according to ACOG criteria: (a) contractions of uterus occurring 8 in 60 minutes or 4 in 20 minutes with changes in the cervix; (b) cervix is dilated more than 1 cm and (c) effacement of cervix is 80% or more.[10]

A detailed anthropometric and demographic data was recorded at the time of admission. A detailed history of present pregnancy including genitourinary infections, APH, PIH, PROM, past medical and surgical history along with past obstetrical history was taken to determine the causative factors. Detailed examination general, physical, systemic and obstetrical was performed. Gentle per speculum and per vaginum examination was done. All investigations including Hemogram, LFT, KFT, electrolytes, TORCH profile, urine routine examination, urine and vaginal culture sensitivity, ultrasonography and other basic investigation to evaluate the underlying cause of preterm labour was done.

Data management and statistical analysis

The data was collected and entered in MS excel 2010. Different statistical analysis was performed using SPSS software version 22. Descriptive statistics was calculated for quantitative variables (ex- BP, PR, weight, Height, gravida, parity, etc). Frequency along with percentages was calculated for qualitative and categorical variables (example- socio-economic status, occupation, uterine anomalies anemia, sepsis, interventricular hemorrhage etc). Categorical variables were presented in number and percentage (%) and continuous variables were presented as mean±SD and median.

RESULTS

Table 1 shows cases according to period of gestation (weeks). Majority (58.10%) of preterm labour were in between 34-37 weeks, only (21.9%) were in between 28-32 week and (20%) were in between 32-34 weeks.

Table 2 depicts risk factors associated with preterm birth in previous pregnancy. The past history showed that Jaundice was reported among 1 (0.95%), IUD/stillbirth among 13 (12.3%), previous history of abortions among 31 (29.5%) and previous preterm delivery among 29 (27.6%) subjects. There was more than one co-morbidity present in many patients.

Table 3 shows cases according to parity of patients. Majority were multigravida 68 (64.76%) while only 37 (35.24%) were primigravida.

Table 4 shows previous history of abortions of the patients. Total 31 (29.5%) patient had history of previous abortion, out of which 23 (21.9%) had history of previous 1 abortion, while 4 (3.8%) had h/o previous 2 and 4 (3.8%) had h/o more than 3 abortion.

Table 5 shows risk factors associated with preterm birth in current pregnancy. Majority had h/o preterm rupture of membranes (40%) followed by urinary tract infection (32.24%) and pregnancy induced hypertension (30.48%). More than one co-morbidity were present in many patients.

Table 1: Period of gestation (weeks).

Period of gestation (weeks)	Frequency	%
28-31+6	23	21.90
32-33+6	21	20.00
34-37	61	58.10
Total	105	100

Table 2: Risk factors associated with preterm.

Risk factors	Frequency	%
Jaundice	1	0.95
IUD/still birth	13	12.3
Abortions	31	29.52
Previous preterm delivery	29	27.6

Table 3: Parity of patients.

Obstetric history	Frequency	%
Primigravida	37	35.24
Multigravida	68	64.76
Total	105	100

Table 4: Previous history of abortions.

No. of abortion	Frequency	%
1	23	21.9
2	4	3.8
≥3	4	3.8
Total	31	29.5

Table 5: Risk associated with pre-term birth preterm.

Risk factors	Frequency	%
PPROM	42	40
UTI	34	32.24
Anaemia	31	29.52
H/o threatened abortion	24	22.86
PIH	32	30.48
Hypothyroidism	23	21.90
GDM	20	19.05
Itching P/V	12	11.43
RH negative	15	14.29
IUGR	5	4.76
Oligohydromnios	9	8.57
Polyhydramnios	6	5.71
AFI	5	4.76
IHCP	9	8.57
Intra-abdominal surgery	5	4.76
Hydrocephalus	1	0.95
APH	14	13.33
Twins	6	5.71
Emotional trauma	2	1.90
Maternal infection	2	1.90
Uterine anomaly	2	1.9

DISCUSSION

The present study was conducted on 105 preterm pregnant females and risk factors causing preterm labour were identified. In our study that maximum (58.01%) preterm labour was seen in gestation between 34-37 weeks followed by 21.90% between 28 week to 31 week 6 days and 20% in between 32 week to 33 week 6 days. A similar study conducted by Assadi et al in Iraq found that 76.35 pregnant females were in between 32 to 37 weeks of gestation, f/b 18.3% in between 28-31 week 6 days of gestation.[11] Another study by Umeigbo et al in 2015 in Nigeria showed that 45.3% birth in between 32-36 weeks, 41.7% between 28-30 week, and only 13% in between 24-27 week of gestation.[12]

Thus it was concluded that maximum number of preterm birth was after 32 week of gestation. Among the risk factors in previous pregnancy previous history of abortion was found in maximum patient (29.5%), followed by 27.6% seen in previous preterm delivery history. 12.3% had h/o IUD/still birth and 0.95% had history of jaundice. A similar study done by Brown et al in Canada in 2014 observed that 31.03% had h/o previous abortion while only 5.52% had h/o preterm delivery.[13] Another study in contrast to our findings conducted by Abaraya et al in Ethiopia found that 17% had h/o previous preterm delivery and previous h/o abortion was seen in 14.2% cases while 15.6% had h/o previous stillbirth.[14]

Thus it is concluded that previous h/o abortion was commonly associated to preterm labour than previous h/o preterm delivery. Majority (64.7%) of females were multigravida while 35.3% were primigravida and previous one history of abortion was seen in majority of (21.9%) preterm pregnant females than previous history of 2 or more than 2 abortions which is similar to the study conducted in Mangalore, India by Prakash et al where they found that maximum number of patients were multigravida (72.92%). Also it was found that previous 1 history of abortion was present in maximum cases (12.5%) than history of previous 2 or more than 2 abortions.[7]

Another similar finding were obtained by Fernandes et al on 410 patients of pre-term labour where multigravidas accounted for 54.39% while primigravidas were 45.61%. And 30.49% had history of one abortion while 3.14% and 1.34% had history of previous 2 or more than 2 abortions.[15]

Thus multiparity and previous history of 1 abortion is associated with preterm labour. In current pregnancy preterm rupture of membranes (40%) was the most common risk factor followed by urinary tract infection (32.24%) and pregnancy induced hypertension (30.48%). Other factors associated were anaemia (29.52%), previous LSCS (25.71%), history of threatened abortion in current pregnancy (22.86%), hypothyroidism (21.90%), gestational DM (18.1%) and others. There was more than one co-morbidy present in one patient.

Similar to our findings, study done by Shetty et al on 343 pre-term pregnant females showed that most common risk factor associated are PIH (32.9%) followed by PROM (18.1%) and idiopathic causes (14.9%).[3] Another similar study was done by Garg et al in Haryana, India on 100 patients where they found that pre-term rupture of membranes was most common risk factor (22%) followed by PIH (21%) and itching per-vaginum (19%).[10] In contrast to our study, a study conducted by Sudhir et al on 107 preterm females in Telangana, found that hypertension

(41.12%) was major risk factor followed by anaemia (35.55%), oligohydromnios (30.84%), vaginitis (27.10%), PROM (7.47%) and UTI (13.08 %).[16]

Thus it can be deduced from our study that pre term pre-labour rupture of membranes in current pregnancy is the most common risk factor associated with pre-term delivery.

CONCLUSION

Risk factors associated with pre-term labour are multifactorial and most of the risk factors are preventable. Therefore we aimed to identify these risk factors at the earliest possible time. As earlier detection of high risk factors, appropriate intervention, institutional delivery and good neonatal care backup facilities can improve the outcome of pre-term labour.

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