Original Research Article

A study of risk factors of preterm labour

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Abstract

Background: Preterm births continue to be the leading cause of perinatal and neonatal morbidity, representing one of the principle targets for obstetric health care and challenging the obstetrician to tackle this problem by focusing on the preventive approach.

Aim and Objective: The study aimed to know the risk factors for preterm labour, determine the perinatal outcome, and to identify the cases which need intervention.

Materials and methods: This was a retrospective study done at the Department of Obstetrics and Gynecology, King George hospital, Visakhapatnam from November 2018 to April 2019. During this period total 356 preterm deliveries were enrolled for the study.

Results: The study showed the incidence of preterm births to be 9.62%. The maximum number of cases belonged to age group 20-24 years. 19.92% belonged to extremes of reproductive age group.11.69% had a history of previous preterm births, 47.85% of the patients who presented in preterm labour had a previous history of abortions. The significant risk factors found to be associated with preterm labour were PROM, Hypertensive disorders, Antepartum hemorrhage, GDM, Anemia, heart disease, Malpresentations, Multiple gestations, etc.

Conclusion: Preterm labour and preterm birth require early and prolonged hospitalization posing great financial and psychological burden on family. Most etiological factors are modifiable. Preconceptonal counseling should emphasize family planning, good nutriton, safe sex, good hygiene, treatment of sexually transmitted diseases, and avoidance of tobacco, alcohol, abusive drugs and harmful work conditions. All efforts should be made to prolong the pregnancy beyond 34 weeks for better neonatal outcome. Tocolytics help by giving time for steroid coverage so that morbidity due to RDS can be decreased.

Key words

Preterm labour, Risk factors, Tocolytics, Perinatal morbidity.

Introduction

Preterm labour is defined as onset of regular uterine contractions associated with cervical changes starting before 37 completed weeks of gestation, with or without intact fetal membranes. Estimates of preterm birth rates ranges from 5-10% in developed countries to 25% in developing countries [1]. The worldwide incidence of preterm labour ranges between 6 and 11% [2]. The American Academy of Pediatrics and the American College of Obstetrics and Gynecology proposed the following criteria to diagnose preterm labour [3].
1. Contractions of 4 in 20 min or 8 in 60 minutes plus progressive cervical changes.
2. Cervical dilatation greater than 1cm.
3. Cervical effacement of 80% or greater.

Preterm birth is responsible for 85% of neonatal deaths in normally formed infants who do not have any congenital anomalies.

Aim and objectives

- To know the risk factors for preterm labour
- To determine the perinatal outcome
- To identify the cases which need early intervention.

Materials and methods

This was a retrospective study conducted in the Department of Obstetrics and Gynecology, KGH, Visakhapatnam from November 2018 to April 2019. A total of 356 cases were found to be suitable for inclusion from among 3869 deliveries in the above period. Patient enrolled in the study were subjected to detailed history with respect to age, parity and for presence of any risk factors in the pregnancy including GDM, PIH, Anemia or any medical disease. A thorough obstetric and systemic examination was done for the presence of hydramnios and multiple gestation. For all the cases basic investigations and ultrasonography were done to estimate gestational age, placental position, AFI measurement. Some patients came with spontaneous onset of labour pains and in some patients labour was induced due to medical reasons. All the patients taken up for the study were followed up till they are discharged from the hospital.

Inclusion criteria

- Lower limit for period of viability was 28 weeks
- Upper limit was before 37 weeks period of gestation
- Any patient whose pregnancy was terminated preterm for any maternal or fetal indication.
- Patients who presented with leaking per vaginum
- Patients who presented with Antepartum hemorrhage

Exclusion criteria

- Pregnancy beyond 37 completed weeks
- Pregnancy before 28weeks
- Patients referred with intra uterine fetal demise
- Patient who were initially admitted as threatened preterm labour and responded to management and were subsequently discharged or delivered at term were excluded.

Patients enrolled into the study were subjected to a detailed history with respect to age, parity, and for the presence of any risk factors in this pregnancy including GDM, PIH, Anemia or any other medical disease. A thorough obstetric and systemic examination was done for the presence of Hydramnios and Multiple gestation.

Results

The total no. of deliveries in the hospital beyond 28 weeks were 3869. 356 patients presented in preterm labour, giving an incidence of preterm birth to be 9.2%. Out of the 356 cases, maximum cases of preterm labour were in the age group of 20-25 years. 25(7.02%) were teenage pregnancies, 46(12.9%) were elderly. Therefore, extremes of reproductive age groups accounted for 19.92% (**Table – 1**).

Table – 1: Distribution of cases according to age distribution preterm labour.

Age (Years)	No. of cases	%(n=356)
<19 yrs	25	7.02%
20-24 yrs	161	45.22%
25-29 yrs	124	34.8%
>30yrs	46	12.9%
Total	356	100%

Table - 2: Distribution of cases according to gravidity.

Gravidity	No. of cases	%(n=356)
Primigravida	168	47.19%
Multigravida	188	52.81%
Total	356	100%

Table – 3: Distribution of cases according to parity.

Parity	No. of cases	Percentage (n=188)
G2	87	46.2%
G3	61	32.5%
G4	26	13.8%
G5	11	5.85%
G6	3	1.65%
Total	188	100

Table – 4: Distribution of cases with previous history of abortions.

No. of previous abortions	No. of cases	Percentage (n=188)
1	63	33.5%
2	23	12.23%
3	4	2.12%
Total	90	47.85%

Table – 5: Distribution of cases with previous history of preterm births.

Previous preterm births	No. of cases	% (n=188)
1	17	9.04%
2	4	2.12%
3	1	0.53%
Total	22	11.69%

In this study, 168 were Primigravidae (47.19%) while the rest were Multiparous (52.81%) as per **Table – 2**.

Table – 6: Distribution of cases according to risk factors.

Risk factors	No. of cases	%
Hypertensive orders	110	30.8%
PROM	71	19.94%
Hydramnios	45	12.6%
APH	29	8.14%
Oligoamnios	25	7.02%
malpresentation	22	6.17%
GDM	19	5.3%
Anemia	19	5.3%
Multiple gestation	19	5.3%
Hypothyroidism	16	4.49%
Heart disease	12	3.3%
UTI	12	3.3%
IUGR	12	3.3%
fever	6	1.6%
Overt diabetes	6	1.6%
Bronchial asthma	6	1.6%

Table – 7: Distribution of cases according to mode of labour.

Mode of labour	No. of patients	%
Spontaneous	137	38.48
Induced	193	54.2

Table – 8: Distribution of cases according to indication of cesarean section.

Indication	No. of cases	%
Contracted pelvis	6	1.68%
Fetal distress	19	5.3%
Post cesarean section	20	5.61%
Failed induction	62	17.4%
Total	107	29.99%

Table – 9: Distribution of cases according to mode of delivery.

Mode of delivery	No. of cases	%
Vaginal	249	69.9%
Cesarean section	107	29.99%

Among the multiparous presenting in preterm labour, 87 were G2, 61(32.5%) were gravida 3, 26(13.8%) were gravida 4 and there were 14(7.45%) cases of grand multipara (**Table – 3**).

Out of 188 cases, history of previous 1 abortion was present in 63(33.5%) cases, history of 2 previous abortions was present in 23

cases(12.23%) and history of 3 abortions was present in 3 cases (2.12%) as per **Table – 4**.

Out of 188 cases, no. of 1 previous preterm births was present in 17 cases (9.04%), no. of 2 previous preterm births was present in 4 cases (2.12%), no. of 3 previous preterm births was present in 1 cases (0.53%) as per **Table - 5**.

GDM and Anemia was noted in 19 patients with preterm labour, accounting to 5.3%. Hypertensive disorders were commonly present, in this study 110 patients were associated with preterm births. 22 patients were found to have malpresentations accounting to 6.17%. 19 patients presented with multiple gestation accounting to 5.3%. PROM was present in 71 cases accounting to 19.94%. Polyhydramnios was present in 45 cases accounting to 12.6%. Oligoamnios was present in 25 cases accounting to 7.02%. Overt diabetes, Bronchial asthma, fever seen in 6 cases each accounting to 1.68%. APH was seen in 29 cases accounting to 8.14%. Heart disease, UTI was present in 12 cases accounting to 3.3% each. Among 356 cases of preterm labour, it was observed that 341(95.7%) patients had one or multiple risk factors, while 15 patients (4.2%) patients did not have any risk factors (**Table – 6**).

Out of 356 cases, 137 cases (38.48%) went in to spontaneous labour and rest 193 cases (54.2%) were induced (**Table – 7**).

Out of 356 cases, 109 cases (30.49%) underwent caesarean section, out of which 62 cases (17.4%) were due to failed induction, 20 cases (5.61%) were due to Post cesarean section, 19 cases (5.3%) were due to fetal distress, 6 cases (1.68%) were due to contracted pelvis (**Table – 8**).

Out of 356 cases, 249 cases (69.9%) delivered vaginally, 107 cases (29.99%) underwent cesarean section (**Table – 9**).

Discussion

In our study, out of 3869 patients who delivered beyond 28 weeks, 356 presented in preterm labour.

The incidence of preterm births in our study is 9.2%. This study is in close agreement to worldwide incidence of 6-11% as reported by Stacy Beck, et al. [4]. However, in India, Singh Uma, et al. [5] in their study reported an incidence of preterm births as 20.9% and incidence of preterm labour as 22%.

This difference may be due to differences in socio economic status of subjects, poverty, nutrition, literacy and awareness of antenatal care between the two states where these studies were undertaken.

Age incidence

Maximum number of cases of preterm labour in our study was in the age group 20-24 years, accounting for 45.22%. This was followed by 34.8% in the age group 25-29 years. Extremes of age group accounted for 19.92% (**Table - 1**). The present study is comparable to study done by Renay Weiner, et al. in Kenya [6] wherein 18.8% of cases were in the extremes of reproductive age group.

Gravidity and preterm labour

47.19% who presented in preterm labour were primigravidas in our study, while multigravidas accounted for 52.81% (**Table - 2**). The findings in the present study are consistent with the study by Fernandes SF, et al. [7] (2015) where 45.61% were primigravidas, while multigravidas accounted for 54.39%.

Parity and preterm labour

In our study, 46.2% of multigravidas were pregnant for the second time, 32.5% for the third time, 13.8% for the fourth time, 7.5% were grand multiparas. This is comparable to Fernandes SF, et al. [7] in which second gravidas accounted for 50.02%. 37.67% were pregnant for third time and 8.97% for the fourth time. In their study, however, 1.3% were grand multiparas.

Past obstetric history

In our study, 33.5% of patients who presented in preterm labour had a history of one abortion (**Table - 4**). This was in contrast to the incidence reported by Arias, et al. [8] i.e. 13%. In our study, 11.69% had a history of previous preterm births which is close association with Fernandes, et al. [7] study of 12.11%, and Pandey Kiran, et al. [9] of 14.4%.

Antenatal risk factors and preterm labour

Among 356 cases of preterm labour, it was observed that 341(95.7%) patients had one or multiple risk factors, while 15 patients (4.2%) patients did not have any risk factors. GDM was noted in patients with preterm labour, accounting to 5.3%. This is comparable to a study by Taskeen Rehana [10] in which it is 4%.

Hypertensive disorders were commonly present, in this study 110 patients were associated with preterm births accounting to 30.8%. This is comparable to studies by SJ Etuk, et al. [11] in which it is 23.8%.

3.6.17% patients were found to have malpresentations. However, in studies by Fernandes, et al. [7] and Taskeen Rehana [10] it is 18.4% and 21% respectively.

The incidence of UTI in our study is 3.3%, however, it is 13.65% in Fernandes et al. [7] study, 20.34% in Pandey, et al. [9] study.

The incidence hydramnios in our study is 12.6% however, it is 1.46% in Fernandes, et al. [7] study, 0.79% in Pandey Kiran, et al. [9] study.
The incidence of PROM in the present study is 19.94% which is in close association with study done by Chythra R Rao [12] in which it is 17.5%.

Mode of labour

In our study, 38.48% of cases went in to spontaneous labour and 54.2% cases were induced (**Table - 7**).

Indication of caesarean section

The incidence of caesarean section in our study is 30.49%, out of which 17.4% were due to failed induction, 5.61% were due to Post cesarean section, 5.3% were due to fetal distress, 1.68% were due to contracted pelvis (**Table - 8**).

Mode of delivery

Out of 356 cases, 69.9% delivered vaginally, 29.99% underwent caesarean section (**Table - 9**).

Conclusion

Preterm labour and preterm birth require early and prolonged hospitalization posing great financial and psychological burden to family. Most etiological factors are modifiable and proper. Preconceptional counseling and appropriate antenatal care can avoid most preterm births.

In our study as hypertensive disorders is the most common risk factor for preterm delivery, careful antenatal checkups and BP monitoring can reduce preterm deliveries in our institution.

Once diagnosed, all efforts should be made to prolong the pregnancy beyond 34 weeks for better neonatal outcome. Tocolytics help by giving time for steroid coverage so that morbidity due to RDS can be decreased.

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