

Original Research Article

Analysis of Etiology and Outcome of Preterm Labour in Tertiary Health Centre of Uttarakhand

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Abstract: Currently preterm labour is one of the most challenging problems confronting the obstetricians and perinatologists, as this unfortunate episode in the course of woman's pregnancy takes a heavy toll of perinatal mortality which accounts for 50-75% of the perinatal mortality. A prospective study was conducted on 110 pregnant women with preterm labour admitted in Dr. Sushila Tiwari Memorial Hospital, Haldwani from Jan 2014 to June 2015 to study the causes and outcome of Preterm birth in Tertiary health centre of Uttarakhand. Our study concluded that the incidence of preterm birth from Jan 2014 to June 2015 was 14.34%. The maximum incidence was found between 34-37 weeks of gestation (47.27%) followed by 31-33 weeks (32.72%) and 28-30 weeks (20%). Past obstetric history had an impact on the outcome of the present pregnancy. 20% patients presenting with preterm labour had a past history of abortions and 16.4 % had a history of preterm delivery. Genitourinary tract infection was found to be the most common risk factor related with preterm labour. 75 patients had either vaginal infection (32.7%) or urinary tract infection (34.7%), or both. Premature rupture of membranes preceded onset of preterm labour in 31% cases. Another important risk factor identified in this study was antepartum haemorrhage which was the cause in 17.3% cases. Preterm babies suffered from various complications like jaundice (32.3%), respiratory distress syndrome (22.6%), sepsis, coagulopathy, hypocalcaemia, hypoglycaemia etc. Identifying risk factors to prevent onset of preterm labour, and an advanced neonatal care unit can help decrease neonatal morbidity and mortality.

Keywords: Preterm Labour, Aetiology, Neonatal Outcome.

INTRODUCTION:

Currently preterm labour is one of the most challenging problems confronting the obstetricians and perinatologists, as this unfortunate episode in the course of woman's pregnancy takes a heavy toll of perinatal mortality which accounts for 50-75% of the perinatal mortality. In India, among the total 27 million babies born annually, 3.6 million babies are born preterm, and over 300,000 of these preterm babies die each year because of associated complications [1].

It is estimated that the risks of neonatal mortality and low birth weight are increased by almost 50 percent if maternal age at childbirth is less than 20 years [2]. A very strong association has been found with education status and socioeconomic status in cases of preterm births. Despite the advances in fetomaternal medicine the preterm rate continues to be high. Women's education is associated with decline in preterm birth rate [3]. Recent studies have shown association between preterm birth and Stress and depression, negative life events, perception of racial discrimination and domestic violence are also

associated with higher preterm births [4]. A significant proportion of preterm births are preventable by adequate antenatal care. Female literacy and health education will increase the awareness about antenatal care.

Uttarakhand is a state where some socio-demographic factors are peculiar and are the major determinants of preterm birth. Recognizing that the majority of preterm births are late or moderate preterm (during 32-36 weeks gestational age), even small reductions in the rates of these categories of preterm birth would mean sizable decreases in the number of overall preterm deliveries. Thus, it is important to ensure effective planning and design of programs focusing on preterm births, specifically in low resource settings like in our Kumaun region of Uttarakhand.

So our study aims to find out the main etiological factors related to preterm births especially those which can be intervened upon so that proper measures can be undertaken to decrease the preterm

birth rate and neonatal morbidity and mortality associated with prematurity.

MATERIALS AND METHODS

Study place:

This study was carried out in the Department of Obstetrics and Gynaecology of Dr. Sushila Tiwari Memorial Hospital, Haldwani, District Nainital of Uttarakhand.

Sampling Method and study design:

Hospital based Prospective study.

Sample size and study period:

A prospective study was conducted on 110 pregnant women with preterm labour admitted in the Labour Room of Dr. Sushila Tiwari Memorial Hospital, Haldwani from January 2014 to June 2015.

At the time of admission a detailed history was taken and thorough general physical, systemic and obstetric examination was done paying special attention to the presence of conventional risk factors for preterm labour. Gentle per speculum examination and if required a per vaginum examination and Bishop scoring was done. Complete haemogram, urine routine examination, urine culture and sensitivity, vaginal culture and sensitivity and CRP levels were sent. Ultrasonography was conducted as and when required to document fetal gestational parameters, rule out multiple pregnancy, congenital malformations and fetal growth restriction, Amniotic Fluid Index, placental localization and grading and also to assess the cervical length and status of the cervical os. Antibiotic was

given according to culture and sensitivity report. These patients were followed up till delivery. 110 patients were delivered in the hospital and Gestational age at the time of delivery, mode of delivery and neonatal outcome in terms of birth weight, morbidity and mortality were recorded.

Inclusion Criteria:

- Preterm Premature rupture of membranes (leaking of amniotic fluid PV)
- Contraction of 4 in 20 min or 8 in 60 min, each should last more than 20 seconds + progressive changes in cervix.
- Cervical dilatation ≥ 1 cm.
- Cervical effacement of 80% or greater
- UTI with labour pains after 28 weeks of gestation.
- Chorioamnionitis.
- Preterm labour due to polyhydramnios or multiple fetal pregnancies.

Exclusion criteria:

- Pregnancy with intrauterine death.
- Pregnancy before 28 weeks of gestation.
- Pregnancy with congenital anomalies.

Data Analysis:

All statistical analyses were performed with the SPSS 18.0 program for Windows. Student's unpaired T was used for statistical evaluation of continuous variable (age, weight, gestational period, and pathological findings).

RESULTS:

Table 1: Distribution of subjects according to risk factors

S No.	Risk factors	No (Percentage %)
Past obstetric history		
1	Abortion	22 (20%)
2	Preterm delivery	18 (16.4%)
3	Diabetes	9 (8.2%)
4	Hypothyroidism	7 (6.4%)
5	Anaemia	29 (26.4%)
Present obstetric history		
1	Vaginal infection	36 (32.7%)
2	UTI	39 (34.7%)
3	PROM	35 (31.8%)
4	Abruption	19 (17.3%)
5	PIH	21 (19.1%)
6	Multiple Gestation	14 (12.7%)
7	Polyhydramnios	10 (9.1%)

Table 2: Organisms Causing Genitourinary Infections

S No.	Organisms	Urine C/S		Vagina C/S	
		No	%	No	%
1	E. coli	28	25.5	16	14.5
2	Klebsiella	11	10	Nil	Nil
3	Streptococcus	Nil	Nil	14	12.7
4	Acinobacter	Nil	Nil	6	5.5

Table 3: Neonatal Morbidity Associated With Prematurity

S No.	Neonatal morbidity	Number	Percentage (%)
1	RDS	28	22.6
2	Pneumonia	5	4.03
3	IVH	10	8.1
4	Jaundice	40	32.3
5	NEC	6	4.84
6	Hypoglycemia	8	6.45
7	Asphyxia	17	13.7
8	Septicemia	13	10.5

DISCUSSION:

In our tertiary care centre the incidence of preterm birth from period of Jan 2014 to June 2015 was 14.34%. This is significantly more than the incidence of preterm birth given by researchers like Sumana and Misra *et al.*; [5] who reported an incidence of 5-12% and Singh M *et al.*; [6] who reported an incidence of 10-12%. The high incidence of preterm births in our institute is probably because, being a tertiary care centre dealing with high risk pregnancies, this includes those patients who were delivered before term in view of other obstetric indications. The maximum incidence was found between 34-37 weeks of gestation (47.27%) followed by 31-33 weeks (32.72%) and then between 28-30 weeks (20%).

Aetiology of preterm labour was found to be multifactorial. We found a correlation between past obstetric history and the reproductive outcome in the present pregnancy. 20% patients presenting with preterm labour had a past history of abortions. Our results were consistent with the findings of Trivedi *et al.*; [7], Chhabra *et al.*; [8] and Singh *et al.*; [9] where 22.6% 18% and 14.4% subjects respectively had history of previous abortions. 16.4% patients in our study had history of preterm delivery in the previous pregnancies also. Singh Uma *et al.*; [9] also found that 14.4% patients had history of previous preterm delivery. Pandey *et al.*; [11] also concluded that prior preterm birth is a risk factor for preterm labour and it was identified in 14.14% subjects in their study group. Therefore a detailed past obstetric history should be taken in all antenatal patients and those with a prior history of spontaneous abortions or preterm births should be counselled regarding the risk of preterm labour in the present pregnancy and managed accordingly.

The commonest risk factor for preterm labour in our study was genitourinary tract infection. 32.7% subjects in our study had vaginal infection. Singh *et al.*; [9] found positive vaginal culture in 12.25% patients and Deka *et al.*; [11] found that cervical infection was present in as many as 55% patients with preterm labour. We found that E. coli was the most common organism isolated both in urine culture (22.5%) and vaginal culture (14.5%). Singh *et al.*; [9] also found that E. coli and Staph aureus were the commonest organisms (32% each) isolated. In the study conducted by Deka *et al.*; [11] most commonly isolated organisms were Staphylococcus aureus, micro aerophilic gram positive non sporing bacilli and Peptostreptococcus. 34.7% patients in the study group had urinary tract infections. Similar finding were reported by Pandey *et al.*; [10], Chhabra *et al.*; [8] and Singh *et al.*; [9] who found an incidence of 20.34%, 14% and 8.4% respectively confirming that UTI is an important risk factor for preterm labour. This means that it is important to diagnose UTI early and treat it aggressively to prevent preterm labour.

Another important cause of preterm labour in our study was preterm premature rupture of membranes which was associated with 31.8% preterm births. This is in accordance with Singh *et al.*; [9] study where preterm premature rupture of membranes was associated with 25.9% preterm births and was the commonest cause of preterm labour. Multiple pregnancies were found to be associated with preterm labour in 12.7% of our patients. Arias [14] also reported that multiple pregnancy was responsible for 12-25% of all preterm deliveries. Ante partum haemorrhage contributed to 17.3% preterm births in our study. Tocolysis was not offered to these patients and they were allowed to deliver. This is in accordance with the findings of Singh *et al.*; [9] who also found that

antepartum haemorrhage either led to spontaneous onset of preterm labour or induction of labour in view of abruptio placentae in 10.8% patients.

The most common neonatal complications in our study group were jaundice (32.3%), RDS (22.6%) and asphyxia (13.7%). Sonkusare *et al.*; [12] reported the incidence of jaundice as 50.80%, RDS as 20.16% and sepsis as 23.39%. These were also the common complications in studies carried out by Singh [9] and Venkat *et al.*; [13]. The incidence of RDS was maximum in extremely premature babies and reduced significantly with increasing birth weight, gestation and in patients who received 2 antenatal doses of Injection betamethasone.

CONCLUSION:

This study concludes that the incidence of preterm birth from period of Jan 2014 to June 2015 was 14.34% in Dr Sushila Tiwari Hospital, Haldwani. Following etiological factors were significantly associated with preterm birth i.e. previous history of preterm delivery or abortion, anaemia, premature rupture of membranes, pregnancy induced hypertension, polyhydramnios and multiple gestations. The incidence of genital tract infection and urinary tract infection was more in patients presented with preterm labour. Neonatal morbidity and mortality was more in babies delivered prematurely and the most common cause of neonatal mortality among preterm infants was extreme prematurity and respiratory distress syndrome.

So the study concluded that the incidence of preterm birth was 14.34% and neonatal mortality was 26.93% during the study period which can be reduced by improving the level of education, socioeconomic condition, early identification of at risk patients, enhanced services and connections to community services, early referral to tertiary health care centres etc.

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