

Original Research Article

A Study of Evaluation of Etiological Factors of Preterm Labour in a Tertiary Hospital

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Abstract: The objective is to determine the etiological factors of preterm labour in female patients who presented with preterm labour in Bebe Nanki Mother and Child Care Centre, Obstetrics and Gynaecology Department of Government Medical College and Hospital, Amritsar. A study was designed in tertiary care hospital using 100 females who met the inclusion criteria. Overall incidence of preterm births in our hospital from April 2013 to March 2014 was 19.82%. Young female's upto 30 years of age were more commonly affected. There are some modifiable and non modifiable factors responsible for preterm labour. Management of these factors plays an important role in prevention of preterm labour.

Keywords: Preterm, Modifiable, labour, prevention

INTRODUCTION

Preterm labour is defined as the onset of labour pains before 37 completed weeks of gestation i.e. 259 days from first day of last menstrual period. It is a very challenging obstetrical complication encountered by obstetricians. [1] 85% of preterm births occur between 32 to 37 weeks. [2] Events leading to preterm birth are still not completely understood, although aetiology is thought to be multifactorial. It is unclear whether preterm birth results from the interaction of several pathways or the independent effect of each pathway. Causal factors linked to preterm birth include medical conditions of the mother or fetus, genetic influences, environment exposure, infertility treatments, behavioural and socioeconomic factors and iatrogenic prematurity[3]. Genitourinary tract infections are one of the important cause of preterm delivery. Uterine contractions may be induced by cytokines and prostaglandins released by microorganisms [4]. Recent epidemiological and microbiological-immunological studies have suggested that periodontal disease may be an independent risk factor for preterm deliveries or low-birth-weight infants [5]. A short cervical length on second trimester ultrasound is among the best methods

to predict spontaneous preterm birth [6]. While the most important historical risk factor is a history of prior preterm birth [7]. The prevention of preterm delivery will require interventions at an earlier stage in the process that lead to it. The present study was conducted to identify the etiological factors of preterm labour.

MATERIALS AND METHODS

The present study was conducted during a period of Nov. 2012 to Sept. 2014 at Bebe Nanki Mother and Child Care Centre, Obstetrics and Gynaecology department of Government Medical College, Amritsar. The study was a prospective study and approved by Institutional Ethical Committee.

Selection of Sample:

Inclusion Criteria:

The patients who presented with onset of labour pains before 37 completed weeks of gestation from first day of last menstrual period.

Exclusion criteria:

Maternal factors:-

Insulin dependent diabetes mellitus prior to pregnancy, Gestational diabetes mellitus, Heart diseases, Renal diseases (pyelonephritis, renal failure), Chronic hypertension, Toxaemia of pregnancy, HELLP syndrome, Massive bleeding P/V (placenta praevia, abruption placenta), Uterine malformations

Fetal factors:-Fetal distress, Fetal anomaly

PLAN OF STUDY

The patients were recruited in the study after an informed consent based on following inclusion and exclusion criteria and approval of ethical committee was taken. Patients were evaluated by history taking, clinical examination, laboratory tests, and ultrasonography reports and were managed to optimize preterm labour.

Review history included:-Obstetrical, Medical and Surgical

Assessment for signs and symptoms of preterm labour including:-Regular uterine activity, Lower back pain, Vaginal spotting or show, Cervical effacement /dilatation

Investigations:-

All routine investigations including Haemoglobin, BT (bleeding time), CT (clotting time), blood group, RBS (Random blood sugar), TLC (Total leucocyte count), DLC (Differential leucocyte count), urine complete examination, urine culture and sensitivity, vaginal Culture and sensitivity, PT/PTI/Platelets (if needed), RFTs (if needed), LFTs (if needed), CRP, Ultrasonography for fetal well-being and placental location.

RESULTS AND OBSERVATIONS

Table 1: Distribution of patients according to age

Age (years)	No. of patients	% age
≤20	08	08
21-25	55	55
26-30	33	33
31-35	04	04
Total	100	100

Mean = 24.67; SD = 3.098

Table 2: Distribution of patients according to height

Height (cms)	No. of patients	% age
<145	04	04
145-150	17	17
151-155	44	44
156-160	22	22
>160	13	13
Total	100	100

Mean = 154.31; SD = 7.215

Table 3: Distribution of patients according to weight at admission time

Weight (in kgs)	No. of patients	% age
≤40	01	01
41-50	26	26
51-60	48	48
61-70	22	22
71-80	02	02
>80	01	01
Total	100	100

Mean = 56.205; SD = 7.93

Table 4: Distribution according to gravida

Gravida	No. of patients	% age of patients
Primigravida	32	32
Second	46	46
Third	19	19
Fourth	03	03
Total	100	100

Table 5: Distribution according to risk factor in the past

Past history	No. of patients	% age
Abortions	13	13
Preterm delivery	17	17
IUD delivery	03	03
Cervical incompetence	01	01
No previous high risk history	66	66
Total	100	100

Table 6: Distribution of patients according to risk factors in present pregnancy

Complications	No. of patients	% age
Vaginal infections	24	24
Urinary tract infections	13	13
PPROM	23	23
Malpresentation	12	12
Multiple pregnancy	10	10
PIH	10	10
APH	04	04
3 rd degree UV prolapse	01	01

Table 7: Investigations on admission

Investigations	Range	Number	% age
Hb	<10 g%	48	48
	>10 g%	52	52
TLC	<15000	100	100
	>15000	00	00
CRP (out of 23 patients who had ROM)	<3 mg/dl	16	69.6
	>3 mg/dl	07	30.4

Mean of Hb = 9.75; SD of Hb = 1.52

Table 8: Distribution of patients according to urine culture (n = 13)

Urine culture	No. of patients	% age
E.Coli	06	46.2
Coagulase -ve Staphylococcus	02	15.3
Klebsiella	02	15.3
Pseudomonas aeruginosa	01	7.69
Staph. aureus	01	7.69
Candida albicans	01	7.69

Table 9: Distribution of patients according to vaginal culture (n = 24)

Vaginal culture	No. of patients	% age
E.Coli	09	37.5
Coagulase -ve staphylococcus	08	33.3
Staphylococcus Aureus	02	8.33
Staphylococcus Epidermidis	01	4.16
Streptococcus	01	4.16
Klebsiella	01	4.16
Citrobacter kosai	01	4.16
Candida albicans	01	4.16

DISCUSSION

This study was undertaken to identify the etiological factors of preterm labour. The incidence of preterm births in our department from April 2013 to March 2014 was 19.82%. Similar incidence of preterm deliveries (20.9%) was reported in Singh Uma *et al.*; study [8]. 17.5% in Venkat Shobha *et al.*; study [9] and 14.57% in Dolar R Trivedi study [10].

Age

Mean age of the patients was 24.67±4.08 years and nearly 90% patients were between the age of 21-30 years and few were ≤ 20 years or >30 years. This is in accordance with the study conducted where mean age was 23.33 years and 82% were 20-29 years old and 8% were older than 30 years [11]. And similar in comparison to our study.

Weight and height

According to present study mean pregnancy weight was 56.20kgs with standard deviation of 7.93kgs. As most of patients came in emergency with preterm labour and even prepregnancy weights of patients were unknown as most of them sought medical check-up after conception and majority of them were unaware of their preconception body weight. So, this data collected does not correlate much with onset of preterm labour as prepregnancy weight. Mean height of the group was 154.31 ± 7.215 cms. 66% of the patients were 151-160 cms tall, 17% were 145-150 cms, 13%

were taller than 160 cms and very few were <145cms. One study conducted had 12% short stature (<140cms) patients who presented with preterm labour [8]. Tyagi and Aggarwal studied maternal anthropometry as determinant of gestation at birth and observed that women with height less than 155cms had high incidence of prematurity.[11] The results of these studies were comparable with our present study.

PARITY

In this study 32% patients were primigravidas and 68% were multigravidas. Similarly a study conducted in 2007 showed, 47% and 53% patients were primigravidas and multigravidas respectively in their study [8].

Past reproductive history

In our study 13% subjects had past history of abortions and as shown by various studies [8, 10, 11] previous history of abortions poses a risk for preterm labour in future pregnancy.

Previous Preterm Deliveries

We found that 17% of patients in our study had spontaneous preterm deliveries in the past which are comparable to studies done to show the previous preterm birth as risk factor for preterm labour 14.4% (60 out of 414) subjects [8] and 14.14 (41 out of 290) patients [12]. Our results are also comparable with study saying 12.2% patients had previous history of preterm delivery [10]. A study conducted to find recurring complications in second pregnancy concluded that spontaneous preterm delivery increases the risk for preterm delivery in second pregnancy from 2.7 to 14.7% [13].

Cervical incompetence

According to Arias F, approximately 5% of the preterm births occur because of anatomical or physiological abnormality of cervix. In our study 1% had history of cervical incompetence. Incompetent cervix secondary to cervical conditions contributes to 3% cases of preterm labour [14].

Genitourinary infections

Vaginal infections and Urinary tract infections were common risk factors for preterm labour in our study. 24% females in our study had positive vaginal cultures and 13% of patients showed positive urine culture reports collected by clean catch method from midstream urine. Various studies conducted to see prevalence of vaginal infection and urinary tract infection found positive vaginal culture in 12.25% patients [8] and Deepika Deka *et al.*; found that cervical infection was present in 11/20 (55%) patients [15]. In a study UTI was seen in 36.7% and 22.2% in preterm and full term labour group respectively [16]. E.Coli was the commonest organism isolated from urine and vaginal

culture followed by Klebsiella, Staphylococcus and Citrobacter culture according to a study done by Singh Uma *et al.*; to find etiological factors of preterm labour [8].

Preterm Premature Rupture of Membranes (PPROM)

In our study PPRM was seen in 23% of total patients in our study. A prospective study done to find the aetiology of preterm labour confirmed that PPRM was associated with 25.9% preterm births and was the commonest cause of preterm labour [8].

Hypertensive Disorder of Pregnancy (PIH)

According to present study, 10% of patients had PIH. Similar in comparison to our study a retrospective study conducted on 97270 women showed incidence of preterm birth in hypertensive patient was 9% [17]. In Singh Uma *et al.* study 3.7% subjects had severe preeclampsia [8].

Malpresentations

In our study 12% patients presented with malpresentations (all breech). According to a study conducted 14.4% patients with preterm labour had malpresentations at the time of admission [8].

Multiple gestations

In present study 10% subjects had multiple pregnancies. All were twin pregnancies. According to study conducted by Pandey Kiran *et al.* 5.86% subjects had multiple pregnancies [12]. Fernando Arias concluded that 12-25% patients with multiple pregnancies had preterm labour [14].

Investigations

Mean Hb level in our study was 9.75 ± 1.52 gm%. Majority (52%) had Hb >10 gm% and only 3 patients had Hb level less than 7 gm%. 48% of subjects were anaemic. The study which evaluated association of maternal anaemia with maternal and neonatal complications, established that preterm birth rate was more common in (9.9%) with average Hb 7.63% as compared to 3.2% with average Hb level of 11.82 gm% [18]. Patra *et al.*; studied maternal and perinatal outcomes in patients with severe anaemia and found that preterm birth rate was high (69.2%) in females with severe anaemia [18]. Most of patients in our study (48%) were anaemic.

CONCLUSION

As from present study it is concluded that there are modifiable and non modifiable factors responsible for preterm labour. Like for instance extra care is needed where patients have previous history or maternal obstetric history of preterm labour. She should avoid heavy work and correction of anemia is much needed. Vaginal and urine culture sensitivity should be

done in every case. Hence prompt management of these factors can decrease the incidence of preterm birth.

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