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Preterm Birth - A Global Health Problem for Fetuses

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Abstract: Frequency of Preterm delivery is high in Pakistan and most of the fetuses remain in life for hours or in days after delivery. There are no data available in Pakistan. These data are collected at Gynaecology Unit-IV, Liaquat University Hospital Jamshoro from January 2005 to December 2005.Out of 980, 131 (13.36%) women were delivered at Preterm and in 39 cases (29.77%) gestational period was 24-29 weeks and in 92 cases (70.22%) gestational period was between 30 and 36 weeks, most of the cases were non-booked i.e. 98 (74.80%) and in 31 (23.66.%) cases membranes were absent, most of the women were multiparous 71 (54.19%). Common presentations was cephalic 99 (75.87%). Complaints were labor pains 61 (46.56%), leaking of liqor 15 (11.45%), vaginal discharge 33 (25.19%), bleeding 18 (13.74%). Mode of delivery was vaginal in 91 (69.46%) and in 40 (30.53%) cases caesarean section was done. Fetal weight was 1-2 kg in 56 (42.74%) and more than 2 kg in 61 (46.56%) cases and less than 1 kg in 14 (10.68%). Fetal outcome - alive at the discharge was 79 (60.30%) and still born were 26.71% and 17 (12.97%) died during early neonatal period. Frequency of Preterm delivery is high and most of the fetuses were still born and died within hours or in days after delivery.

Key words: Preterm delivery · perinatal death

INTRODUCTION

Preterm birth is defined as delivery prior to 37 weeks gestation. It is a major cause of perinatal mortality and morbidity [1]. Etiology is multifactoral but there is over whelming evidence to implicate infection as a major cause accounting for about 40% of all cases of spontaneous Preterm labor and Preterm birth. (Preterm labor is a syndrome rather than a diagnosis since the etiologies are varied).

Risk factors include among others premature rupture of membranes, cervical incompetence, pathological uterine distention's, e.g. polyhydramnios, multiple gestations, uterine anomalies, congenital anomalies, placental abnormalities and social factors such as stress, smoking, heavy work, malnutrition, multiparity. The incidence between 34 to 37 weeks gestation is 7-11% of pregnancies and before 34 weeks gestation it accounts 3-7% of pregnancies [2, 3]. Preterm birth is responsible for ¾ of neonatal mortality and ½ of long-term neurological impairment in children including developmental delay [4, 6]. Many of the surviving infants also suffer from serious morbidity such as bronchopulmonary dysplasia, retrolental fibroplasias leading respectively to chronic lung problems, visual abnormalities including blindness.

Advances in perinatal health care have reduced the incidence of perinatal mortality of babies but still having problems like maternal anxiety, cost of nursery, late health consequences of newborn.

Despite scientific advances, efforts to prevent preterm birth can be disappointing. Obstetric care must focus on strategies to improve the outcome of preterm infants [7]. The major goal is to delay Preterm birth long enough to allow the transfer of women, about to deliver preterm to a facility with a neonatal intensive care unit and to administer corticosteroids to enhance fetal lung maturity. The symptoms of preterm labor include uterine contractions with effacement and dilatation of cervix but they do not reliably predict preterm birth. Prediction of pregnant women's risk for preterm birth both for screening or diagnosis is based on a combination of patient's characteristics, symptoms, physical signs and investigations. Wrong or delayed diagnosis can put mother and baby at risk of an adverse outcome, where as correct predictions of preterm birth provides an opportunity to institute effective therapeutic interventions. There are some effective interventions. The decision regarding the institution of these interventions require timely and accurate screening of pregnant women for the risk of preterm birth.

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The diagnosis of true preterm labor that will eventually lead to preterm birth is facilitated by the use of transvaginal ultrasonography and by the detection of fetal fibronectin (FFN) in cervico-vaginal secretions. The main burden of preterm birth exists in developing countries. There are no accurate recent worldwide data but estimates of preterm birth rate from 5% in developed countries to 25% in developing countries [8].

The preterm delivery rate has been relatively stable at 5-10% in developed countries for many years. The rate of preterm labor is high in our setup and its major effects are on fetal outcome like still birth and early neonatal death, prolonged stay at nursery.

MATERIALS AND METHODS

This study was conducted at Gynae unit IV Liaquat University Hospital from January 2005 to December 2005. All the women admitted during this period with gestational period between 24 weeks and 37 weeks were included. All those women who needed termination of pregnancy due to congenital anomalies and for dead fetuses and pregnancy more than 37 weeks were excluded from the study. The women were thoroughly evaluated regarding their history like booking status, parity, symptomatology, gestational period, antenatal record and clinical examinations like general condition, systemic examination, symphysio-fundal height, fetal presentation, fetal heart sounds, contractions their duration, frequency, vaginal examination for cervical condition, dilatation, membranes status, position and station of presenting part. Investigations like complete blood picture, blood group, blood sugar, mid stream urine analysis, ultrasound examination for gestational age, placental localization, grading for maturity, amniotic fluid index, exclusion of congenital anomalies. Mode of delivery, fetal weight was recorded. The babies, who needed neonatal care or admission, were shifted to the ward. They were followed there for one week. The data is collected and analyzed.

RESULTS

During this period 131 women (13.36%) were delivered at Preterm and in 39 cases (29.77%) gestational period was 24-29 weeks and in 92 (70.22%)cases gestational period was 30-36. Most of the cases were non-booked, i.e. 98 (74.80%). In 16 (12.21%) cases membranes were absent and in 15 (11.45%) membranes were leaking and in 100 (76.33%) membranes were intact, most of the women were multiparous 71 (54.19%) and 20 (15.26%) were primigravida. Common presentations was

Table 1: Frequency of preterm labor

Total Births	Preterm births	%
980	131	13.36

Table 2: Gestational period (n=131)

Gestational period	No. of cases	%
24-29 weeks	39	29.77
30-34 weeks	70	53.43
35-36 weeks	22	16.79

Table 3: Status of membranes (n=131)

Membranes	No. of cases	%
Absent	31	23.66
Intact	100	76.33

Table 4: Booking status (n=131)

Booking status	No. of cases	%
Un-booked	98	74.8
Booked	33	25.19

Table 5: Parity (n=131)

Parity	No. of cases	%
Primigravida	20	15.26
Para 1-3	40	30.53
Para 4 and above	71	54.19

Table 6: Presentation (n=131)

Presentation	No. of cases	%
Cephalic	99	75.57
Breech	24	18.32
Shoulder	8	6.10

Table 7: Symptoms (n=131)

Symptoms	No. of cases	%
Labor pains	61	46.56
Leaking of liquor	15	11.45
Vaginal discharge	33	25.19
Bleeding	18	13.74
Fever	3	2.29
Fits	01	0.76

Table 8: Mode of delivery (n=131)

Mode	No. of cases	%
Vaginal	91	69.46
Caesarean Section	40	30.53

Table 9: Fetal weight (n=131)

Fetal weight	No. of cases	%
<1 kg	14	10.68
1-2 kg	86	65.64
> 2 kg	31	23.66

Table 10: Fetal outcome (n=131)

Fetal outcome	No. of cases	%
Alive at birth	96	73.28
Still Birth	35	26.71

Table 11: Neonatal hospital stay (n=79)

Hospital stay	No. of cases	%
<48 h	31	39.24
>48 h	48	60.75

Table 12: Fetal out come after one week (n=96)

Fetal out come	No. of cases	%
Alive after 1-week	56	58.33
Died within 48 h	27	28.12
Died between 48 h and 1-week	13	13.54

cephalic 99 (75.87%). Complaints were labor pains 61 (46.56%), leaking of liqor 15 (11.45%), vaginal discharge 33 (25.19%), bleeding 18 (13.74%). Mode of delivery was vaginal in 91 (69.46%) and in 40 (30.53%) cases caesarean section was done. Fetal weight was 1-2 kg in 86 (65.64%) and more than 2 kg in 31 (23.66%) cases and less than 1 kg in 14 (10.68%). Fetal outcome - alive at the birth were 96 (73.28%) and still born were 35 (26.71%) and alive after one week were 56 (58.33%) and died with in 48 h were 27 (28.12%) and died with in a week were 13 (13.54%).

DISCUSSION

Preterm birth defined, as birth before 37 weeks is the single most important cause of perinatal mortality and morbidity in high-income countries [9]. Preterm birth is a major clinical problem amounting 47% of all neonatal deaths. The preterm delivery rate in UK is approximately 7% and this figures are steadily increasing [10].

The diagnosis of preterm labor is difficult and most interventions to halt labor are unsuccessful. Despite this, the lack of good data hinders high quality research. With the introduction of Perinatal institute in 2000 at west Midland in UK the survival rates among preterm infant have changed dramatically.

Prematurity is a main issue in modern obstetrical care. According to the previously reported study [11], the Perinatal outcome of 26 infants born by vaginal delivery were compared to 96 infants delivered by cesarean section. The infants weighing less than 1500 g are affected by mode of delivery, i.e. infant born by vaginal delivery showed increase in peri and intraventicular hemorrhage grade III, periventricular leukomalacia, c-reactive protein 24 h post partum and mortality until the 7th day of life. The rate of broncho-pulmonary dysplasia was significantly increased in infants born by cesarean section.

However, it was unclear from this study that which mode of delivery should be preferred. In our study 100 (76.32%) infants were less than 2 kg and 91 (69.46%) were vaginally delivered and cesarean section was performed in 40 (30.53%) cases and our results suggest that the mode of delivery does effect the infant mortality or complication rate but survival rate was more in infants weighing more than 1.5 kg.

The spontaneous preterm birth accounts for 60% of all preterm births in developed countries [12]. With the increase in multiple pregnancies, induced preterm birth and the progress in neonatal care for extremely preterm neonates, spontaneous preterm birth for singleton pregnancies in developed countries had probably decreased over the past 30 years. This decrease is likely to be related to better prenatal care for all pregnant women because the recognition of primary risk factor is early or late pregnancy remains a basic part of prenatal care. In our hospital based single unit study shows that, spontaneous preterm birth rate was 131 (13.36%) of total births and most of these women were un-booked, i.e. 98 (74.8%). They haven't seeked antenatal care. Most of these women were from poor class housewives and the common symptoms were labor pains (46.56%), leaking of liquor (11.45%), vaginal discharge (25.19%), bleeding (13.74%), fever (2.29%) and fits (0.76%). The greatest etiological factor worldwide is infection mainly due to malaria and HIV. In developed countries iatrogenic delivery is responsible for almost half of the births between 28 and 35 weeks, hypertension and pre-eclampsia are the major pathologies. Other factors include multiple pregnancies, intrauterine growth restrictions, maternal stress and heavy physical work [8]. According to the study by Khurram *et al*. [13] the risk factors which lead to the preterm labor are infection (chorioamnionitis), congenital fetal abnormality or uterine abnormality, intrauterine death, polyhydramnios, multiple pregnancy, trauma and fibroid uterus. Complications which results from prematurity are respiratory distress syndrome, reduced threshold for infection and associated low birth weight.

In our study, in 109 (83.20%) women, gestational period was between 24 and 34 weeks pregnancies. In our institute we are lacking the facilities for prediction of infection as a major cause of infection, such as detection of serum SL6 and SL8 and fetal fibronectin (FFN) in cervico-vaginal secretions. Our study showed that 26.7%

fetuses were still born and 96 (73.28%) fetuses were born alive and out of them 79 babies needed admission at neonatal ward and 39.24% babies were there for less than 48 h and 48 (60.75%) remained there for more than 48 h. After one week 56 (58.33%) were alive and 27 (28.12%) babies died with in 48 h and 13 (13.54%) died with in a week.

Management includes cause detection and prevention. Adverse social circumstances are associated with preterm birth which intern effects fetal growth [14]. Mushtaq *et al*. [15], showed in their study that with unexplained preterm labor genitourinary infection was found to be 83% [15]. Shamshad [16], showed in her study that multiparous women an in between 30-40 years of age had the frequency of 10.9% pf preterm labor in comparison to our study the frequency of preterm labor in para 4 and above was 54.19%.

CONCLUSIONS

The frequency of preterm labor is high, Perinatal mortality rate is high. We are lacking the facilities for the predictions of preterm labor and also lacking the facilities for intensive neonatal care in our setup.

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