Vol. 15, No. 2
ORIGINAL PAPER

HEC No. 1428

ISSN No. 1681-5491

GAYNAECOLOGY AND OBSTETRICS

MEDICAL CHANNEL
APRIL - JUNE 2009

RISK FACTORS FOR PRETERM LABOUR IN A RURAL COHORT

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ABSTRACT

OBJECTIVE: *To determine the frequency of preterm birth and to identify its aetiological factors in a rural set up hospital.*
BACKGROUND: *The rate of spontaneous preterm birth keep on rising and the exact cause is still unclear.Generalised approaches in screening for high risk status and interventions have failed to reduce preterm birth rates.Preterm birth presents a clinical dilemma due to it etiologic and pathophysiologic heterogeneities.*
MATERIAL AND METHOD: *This prospective, descriptive study was conducted in the Department of Gynaecology & Obstetrics at Baqai Medical University from January 2006 to December 2007.A total of 136 of cases of preterm labour were evaluated. Information regarding past history, present symptoms and obstetrical history was collected followed by detailed examination. Investigation was done including Hb%, total leukocyte count, platelet count, urine D/R (microscopy, culture and sensitivity), high vaginal swab (gram staining, culture and sensitivity), and pelvic ultrasound. Statistical analysis was performed using SPSS package for windows version 12.5.*
RESULTS: *Frequency of preterm birth was 7.5 % (elective preterm births and twin pregnancies were excluded).Out of 136 cases 56.6% were < 25 years of age, 30.1% were primigravidas, and 91.2% were unbooked cases, 25% had a past history of preterm birth, and 8.8% had past history of > one second trimester abortion. Cause is multifactorial in almost half of the cases. Anemia was the most common cause 45.2%.Othercauses include bacterial vaginosis 16.9%, systemic infection 13.2%, urinary tract infection abruptio placenta and pregnancy induced hypertension 11% each, and fetal anomaly 10.3%, cervical incompetence 3.7% and medical disorders 2.9%.Majority 88.2% had a vaginal birth. There were 74 (40%) perinatal deaths, out of which 41 were intra uterine deaths and 33 neonatal deaths.*
CONCLUSION: *Preterm labour and births are common in rural set up hospital. Anemia and infections are leading factors responsible. Late arrivals of patients to health care facility lead to adverse perinatal outcome. Education, provision of health care, prevention and treatment of risk factors is necessary for to reduce the incidence and adverse pregnancy outcome.*

KEY WORDS: *Preterm labour, Anemia, Genital tract infection*

INTRODUCTION:

Preterm labour is defined as the onset of labour after the gestation of viability (20-28 weeks depends on the definition) and before 37 completed weeks or 259 days of pregnancy. Approximately 45-50% of preterm births are spontaneous and idiopathic, 30% are related to premature rupture of membranes, and another 15-20% is attributed to medically indicated and elective preterm deliveries [1]. Worldwide data on the incidence of preterm birth are unreliable, but incidence ranges between 5% in developed countries and 25% in developing countries [2].Widescale national data is lacking in this respect to show the incidence in our country. Preterm birth is a complex and unresolved public health problem that correlates strongly with poverty, socioeconomic status and level of education among women giving birth [3,4]. The incidence of preterm labour is not available because of problems of definition, but is likely to be higher than that of preterm delivery. Preterm birth is the principal cause of perinatal mortality and morbidity of non-anomalous fetuses [5]. It poses major health economic burden on families and society. Despite intensive research efforts, there is a trend towards increasing rates preterm birth over the past 20 years and its long-term sequelae

remain relatively unchanged. The frequency of preterm birth in the United States increased from 10.7% in 1992 to 12.3% in 2003 [6, 7].
Preterm labour is a pathological condition with multiple aetiologies that extemporaneously activate one or more of the common pathway of parturition [8,9].Recently it is being suggested that gene - gene and gene - environment interactions produce distinct pathophysiologic pathways with respect to an individual's genetic make up and environmental risk exposure [1]. The challenge of managing preterm birth is that of reducing the proportion of mothers who deliver preterm. The sequelae of preterm birth include immediate complications, specifically mortality, and significant morbidity. Preterm birth accounts for one in five children with mental retardation, one in three children with vision
impairment and almost half of children with cerebral palsy. In long term, children born low birth weight have an increased risk for cardiovascular disease, such as myocardial infarction, stroke, and hypertension as an adult, an increased risk for diabetes as an adult, and a possible increase in cancer risk. For the mother, delivering preterm increases her risk of a subsequent preterm delivery [10].
The aim of this study was to determine the frequency of preterm birth and to identify its aetiological factors in a rural set up community based hospital.

TABLE 1:
Demographic & Obstetrical characteristics

	No (%)	P - value
Age < 25 years	77(56.6%)	<0.01
Unbooked status	124(91.2%)	<0.01
Primiparity	41(30.1%)	<0.05
Previous history of preterm birth	34(25%)	<0.01
Previous history of >1 mid trimester abortion	11(8.8%)	<0.01

TABLE 2:
Aetiological Factors in index pregnancy

Risk Factor	No (%)
Anemia	61 (45.2%)
Bacterial Vaginosis	23(16.9%)
Systemic infection	18(13.2%)
Urinary tract infection	15(11%)
Abruptio placenta	15(11%)
Pregnancy induced hypertension	15(11%)
Fetal anomaly	14(10.3%)
Cervical incompetence	5(3.7%)
Medical disorder	4(2.9%)
Polyhydramnios	2(1.5%)
Idiopathic	25(18.4%)

PATIENTS AND METHOD:
This prospective , descriptive study was conducted in the Department of Gynaecology & Obstetrics at Baqai Medical University from January 2006 to December 2007.Pregnant women with gestational age (24 to <37) weeks with preterm labour were included. Elective cases of preterm labour and twin pregnancies were excluded.
A pre-designed research proforma was used to record the information, gathered through labour ward record and patient's file. Information regarding past history, present symptoms, menstrual and obstetrical history were noted, as were the findings of the clinical examination and investigations including hemoglobin %, total leukocyte count, platelet count, random blood sugar, urine D/R (microscopy, culture and sensitivity), high vaginal swab (gram staining ,culture and sensitivity) and ultrasound pelvis(for gestational age, amount of liquor, placental localization, placental abruption, fetal and uterine abnormalities). Statistical analysis was performed using SPSS package for windows version 12.5.Frequency tables and percentages were calculated by the same programme .P value < 0.05 was taken as significant.

RESULTS:
Total number of patients evaluated was 136.More than half of them 77(56.6%) were less than 25 years of age (p <0.01).Majority of them 124 (91.2%) were not booked cases (p <0.01).There were 41(30.1%) primigravidas (p <0.05).Among them 25% has previous history of preterm birth (p<0.01), whereas 8.8% have previous history of more than one mid trimester abortion (p <0.01).
Anemia was the most common cause 45.2%.Othercauses include bacterial vaginosis 16.9%, systemic infection 13.2%, urinary tract infection ,pregnancy induced hypertension and abruptio placenta 11% each, fetal anomaly 10.3%, cervical incompetence 3.7% and medical disorders 2.9%, and Polyhydramnios 1.5%, in 25(18.4%) cases no risk factor could be identified.
Tocolytic therapy was given 26(19.1%) of cases.110 (80.9%) of cases were not eligible for this therapy due to advanced labour, intra-uterine death, infection and antepartum hemorrhage. Out of delivered cases, 120(88.2%) had vaginal delivery and 14(10.3%) had Caesarean delivery. There were 74 perinatal deaths, out of which 41 were intra uterine deaths and 33 were perinatal deaths.

DISCUSSION:
During the study period of 136 cases of preterm labour were evaluated. In 135 patients ultimately delivery occurred still at a preterm gestation and one case was lost to follow up. Total numbers of deliveries during that period were 1815, so the frequency of preterm birth was 7.5% .We have eliminated twins pregnancies and elective preterm deliveries in our study, so the actual frequency of preterm birth will higher than this figure. Anyway; our reported frequency is comparable to the worldwide figure [2, 6, 7].
In our study 91.2% of the patients were devoid of any antenatal care, as seen in another study too [11].Maternity care is likely to be
of importance in screening for risks of preterm labour like infections, inadequate nutrition, medical disorders and cervical incompetence. There is a general agreement that maternal youth is a risk factor for preterm labour [12,13].In our study 56.6% of the cases were belonged to young maternal age. This association was also seen in previous study too [14].
Preterm deliveries in previous pregnancies have been associated with high risk of preterm birth in the next pregnancy [15].In our study past history of preterm labour was positive in 25% of cases while 8.8% of the cases had

more than one second trimester miscarriage in the past. Similar association was observed in another study [11].

In our study cause of preterm labour was multifactorial in a high proportion of the cases. Anemia was detected as the commonest aetiological factor (45 %), as in another study [10].It is compounded with other factors mostly. This association is being documented in another study too [11].This reflects poverty leading to anemia due to nutritional deficiencies in rural areas. This reflects the fact that in rural communities poverty is proportionate to anemia which leads to preterm labour in a significant number of cases.

The second commonest factor detected in our study was the presence of infection. Young maternal age, presence of anemia and nutritional deficiencies leading to immunosuppression could all be responsible for high prevalence of infections [15] in rural areas. Bacterial vaginosis is often asymptomatic and is found in upto 20% women during pregnancy depending on how often the

population is screened [5].It was detected in 25% of cases with preterm labour in a previous study [5].

Frequency of fetal anomalies was quiet high (10.3%) in our study as compared to other study[11]. The commonest ones were neural tube defects. Again this reflects the fact that under nourished state leads to deficiency of folic acid which would be responsible for increased number of cases with neural tube defects.Folate deficiency is also responsible for more cases with abruptio placenta in our study as compared to other study [11].

In our study Tocolytic therapy was advocated in few cases (19.1%) because most of the subject with preterm labour were presented either in advanced, with intrauterine death or chorioamnionitis.Lack of education in rural community women are aware of the sequelae of preterm labour and leaking which is responsible for late arrival to health care facility when no measure can be done to save the pregnancy.

The optimum mode of delivery of women in preterm labour is controversial.Labour is acknowledged as a mechanism that compromises fetal blood gas exchange. Moreover there is increased risk of asphyxia in a preterm fetus as compared to a term fetus. The rate of caesarean section in our study was 10.3% which is comparable to other studies [11, 17] but is low as compared another study [18].The main indications of Cesarean Section were fetal distress and repeat cesarean section. Other indications were abruptio placenta, malpresentation, pregnancy induced hypertension and placenta preavia.

Total perinatal death reported during the study period were 182 and preterm labour was responsible for 74 (40%). In our set up preterm labour was responsible for more perinatal death as compared to the worldwide figure which is showed that 28% neonatal death are attributed to preterm birth [1].In our study we have not took into account all neonatal deaths ;otherwise our reported neonatal mortality will be still more higher than this. High neonatal mortality is because a high proportion of cases had reached to the hospital in advanced labour when steroid therapy can not be instituted to enhance lung maturity.

CONCLUSION:

Anemia and infections are leading factors for preterm labour in deprived rural communities. Due to late arrival to health care facility no time can be gained to administer steroid to improve fetal outcome. Malnutrition and lack of education especially awareness of importance of antenatal care are responsible for prevalence of the above mentioned condition.

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