TO DETERMINE THE FREQUENCY OF FETAL COMPLICATIONS IN PRETERM LABOR

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BACKGROUND: Preterm birth is the major cause of perinatal mortality and morbidity and an important public health concern. Keeping in view the complications involved, preterm babies are a source of financial, psychological and physical burden on their families.

OBJECTIVE: To determine the frequency of fetal complications in preterm labor.

MATERIALS AND METHODS: This descriptive (cross sectional) study was conducted at Department of Gynaecology and Obstetrics, Khyber Teaching Hospital, Peshawar from August 2015 to January 2016. Sample size was 147, using 10.7% proportion of birth asphyxia, 95% confidence interval and 5% margin of error, under WHO software for sample size calculation.

RESULTS: In this study mean maternal age was 30 years with standard deviation ± 1.63. Frequency of low birth weight was analyzed as 113 (77%), birth asphyxia was found in 34 (23%) patients, hypothermia was found in 90 (61%) and hypoglycemia in 71 (48%) patients.

CONCLUSION: All the four parameters (Birth weight, hypothermia, hypoglycemia, birth asphyxia) were found to be significantly effected by the gestational age at which the baby was born. The lower the gestational age, the worse is the outcome and vice versa.

KEY WORDS: Preterm labor, fetal complications, birth asphyxia, hypothermia, hypoglycemia.

INTRODUCTION:
Preterm birth is the major cause of perinatal mortality and morbidity worldwide and an important public health concern. According to WHO definition, preterm births are defined as babies born before 37 weeks of gestational period or 259 days from first day of last menstrual period.

Preterm births are most commonly classified as late preterm when the babies are born between 34 to 36 weeks of gestation, moderately preterm when the babies are born between 32 and 34 weeks of gestation and very preterm that are the babies born before 32 weeks of gestation.

Preterm births complicate about 11.9% of all pregnancies in 2001 and the number of babies born preterm has been steadily increasing for the past two decades. Direct complications of preterm birth account for one million deaths each year, and preterm birth is a risk factor in over 50% of all neonatal deaths. Preterm birth can result in a range of long term complications in survivors, with the frequency and severity of adverse outcomes rising with decreasing gestational age and decreasing quality of care.

In addition to the most common and readily detected complications like birth asphyxia, hypoglycemia, low birth weight and hypothermia which we have taken into consideration in our study, preterm neonates who survive are frequently plagued with short and long term respiratory and neurological morbidities such as bronchopulmonary dysplasia, respiratory distress syndrome, chronic lung disease, cerebral palsy, intraventricular haemorrhage, retinopathy of prematurity, patent ductus arteriosus and poor school performance in later years. Mothers of preterm neonates have greater emotional distress than mothers of term infants for at least one month after delivery.

In the developing countries like ours, preterm babies remain a physical, psychological and financial burden on their families for a long time. With an increase in preterm birth rates, the babies require additional hospitalization, extra care and paediatric surveillance that add to overall health expenditure. According to 2007 statistics, average annual costs for preterm births is 10 times that of full term birth.
birth is associated with significantly increased economic costs over the first two years of life.1 Our study deals with the identification and magnitude of four main complications of preterm babies in a tertiary care hospital in Peshawar, which are undoubtedly responsible for the prolong hospital stay of these babies.

MATERIALS AND METHODS:
This descriptive(cross sectional) study was conducted at Gynae department, Khyber Teaching Hospital, Peshawar from 1st August 2015 to 31st January 2016. Sampling technique was Purposive (non probability) sampling and sample size was 147, using 10.7% proportion of birth asphyxia, 95% confidence interval and 5% margin of error, under WHO software for sample size determination. An inclusion criterion was all pregnant women of any age or parity and with singleton pregnancy who presented with diagnosis of preterm labor. An exclusion criterion was babies with congenital anomalies or intrauterine growth restriction, as detected on ultrasound and clinical examination and multiple gestation.

Approval for the study was taken from Ethical committee of hospital. All the patients fulfilling the inclusion criteria were included. Patients were admitted through casualty and out patient department. Written informed consent was taken from all patients. Diagnosis of preterm labor was made on the basis of period of gestation which was less than 37 completed weeks, as calculated from the first day of last menstrual period or first trimester obstetrical ultrasound, and clinical examination which include palpable uterine contractions on per abdominal examination and effective cervical effacement and dilatation on per vaginal examination. Complete history including age, period of gestation, duration of labor followed by general physical examination, per abdominal and per vaginal examination. Samples for baseline investigations was sent to laboratory. Obstetrical ultrasound was viewed to establish gestational age and growth of fetus. Maternal and fetal monitoring was closely followed throughout the duration of labor and partogram was maintained. At the time of delivery, apgar score(Appearance, heart rate, activity, respiration, color) which was the tool for birth asphyxia was calculated at one and then at five minutes after birth, weights of the babies were recorded on the same weight machine provided in the labor room for newborns to avoid bias and weight less than 2500 grams considered as low birth weight, and temperature was recorded by taking rectal temperature using a standard mercury thermometer, temperature of less than 98.6 °F was taken as hypothermia. Babies were sent to nursery for admission and blood was drawn for estimation of blood glucose within first hour of birth and samples sent to hospital laboratory, blood sugar level of less than 30mg/dl considered as hypoglycemia. All information was entered in a predesigned proforma.

Data was analyzed in SPSS 17.0. Frequencies and percentages were calculated for low birth weight and birth asphyxia whereas mean and standard deviation was calculated for age. Data was presented in form of tables.

RESULTS:
This study was conducted at Gynae department, Khyber Teaching Hospital, Peshawar in which a total of 147 patients were observed and results were analyzed as under.

Maternal age distribution amongst 147 patients was analyzed and mean age was found to be 30 years with standard deviation ±2.14.

Most of the patients 97 (66%) had period of gestation range from 32-37 weeks followed by 43 (29%) patients had period of gestation range from 28-32 weeks and 7 (5%) patients had period of gestation less than 28 weeks. Mean period of gestation was 35 weeks with standard deviation ±1.63 (as shown in table 1).

113 (77%) patients had low birth weight while 34 (23%) patients were of normal birth weight.
Status of APGAR score in 147 babies at 1 minute was analyzed as 22(15%) patients had APGAR score less than 7 while 125(85%) patients had APGAR score more than 7. APGAR score in the same babies at five minutes was 59(40%) patients had APGAR score less than 7 while 88(60%) had APGAR score greater than 7. (as shown in table II)

Most common birth complication was low birth weight which was seen in 113(77%) patients, hypothermia was found in 90(61%) patients, hypoglycemia was found in 71(48%) patients and birth asphyxia was seen in 34(23%) patients. A single baby could have more than one complication (as shown in table III)

TABLE I FREQUENCY OF PERIOD OF GESTATION (n=147)

<table>
<thead>
<tr>
<th>Period of gestation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-37 weeks</td>
<td>97</td>
<td>66%</td>
</tr>
<tr>
<td>28-32 weeks</td>
<td>43</td>
<td>29%</td>
</tr>
<tr>
<td>&lt;28 weeks</td>
<td>7</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100%</td>
</tr>
</tbody>
</table>

TABLE II APGAR SCORE AT 1 MINUTE AND AFTER 5 MINUTES (n=147)

<table>
<thead>
<tr>
<th>Apgar score at 1 minute</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7</td>
<td>22</td>
<td>15%</td>
</tr>
<tr>
<td>&gt;7</td>
<td>125</td>
<td>85%</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apgar score at 5 minutes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7</td>
<td>59</td>
<td>40%</td>
</tr>
<tr>
<td>&gt;7</td>
<td>88</td>
<td>60%</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>100%</td>
</tr>
</tbody>
</table>

TABLE III BIRTH COMPLICATIONS OF PRETERM LABOR (n=147)

<table>
<thead>
<tr>
<th>Complication</th>
<th>Frequency and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Birth Weight + Hypothermia</td>
<td>36 (24.5%)</td>
</tr>
<tr>
<td>Hypoglycemia + Low Birth Weight</td>
<td>21 (14.28%)</td>
</tr>
<tr>
<td>Hypothermia + Hypoglycemia</td>
<td>20 (13.6%)</td>
</tr>
<tr>
<td>Low Birth Weight + Hypothermia + Hypoglycemia</td>
<td>20 (13.6%)</td>
</tr>
<tr>
<td>Low Birth Weight alone</td>
<td>15 (10.2%)</td>
</tr>
<tr>
<td>Birth Asphyxia + Hypothermia + Low Birth Weight</td>
<td>14 (9.52%)</td>
</tr>
<tr>
<td>Low Birth Weight + Birth Asphyxia</td>
<td>12 (8.16%)</td>
</tr>
<tr>
<td>Birth Asphyxia + Hypoglycemia</td>
<td>9 (6.12%)</td>
</tr>
<tr>
<td>Total</td>
<td>147 (100%)</td>
</tr>
</tbody>
</table>

DISCUSSION:
Preterm birth is one of the leading causes of infant mortality and morbidity, amounting to billions of dollars each year, thus increasing the cost for health care. Awareness programs about preterm births may help the women population to know and understand the signs and symptoms of preterm labor.

In study done by Engle W et al, majority of patients(87.7%) were in age range 18-34 years, while 9.6% population were less than 18 years and 2.7% were greater than 35 years20, similarly in our study most patients 110(75%) were in age range 21-40 years.

In a study done at Peshawar, Khyber Pakhtunkhwa by Badshah S et al in which he concluded that 75% patients were in POG range 32-37 weeks while 25% were in POG range 28-32 weeks16, similar results were observed in our study where 97(66%) had period of gestation range from 32-37 weeks followed by 43(29%) patients who had period of gestation range from 28-32 weeks.

In our study, 22(15%) patients had APGAR score less than 7 while 125(85%) patients had APGAR greater than 7. Whereas after 5 minutes, 59(40%) patients had APGAR less than 7 and 88(60%) had APGAR more than 7. Similar
findings were observed in study done by Locatelli A et al in which 17% patients had APGAR less than 7 while 83% had APGAR more than 7. While after 5 minutes, 50% patients had APGAR less than 7 and 50% had APGAR greater than 7.17

Locatelli et al had quoted 10.7% cases of birth asphyxia17 among preterm babies in his study, Nosrat G et al had reported 47% cases of hypoglycemia18 and Zayeri F had reported 36% cases of hypothermia.19 Whereas in our study, birth asphyxia was found in 34(23%) patients, hypothermia was found in 90(61%) patients and hypoglycemia was found in 71(48%) patients.

CONCLUSION:
All the four parameters (Birth weight, Hypothermia, Hypoglycemia and APGAR score) in descending order were found to be significantly affected by the gestational age at which baby is born. The lower the birth weight, the worst is the outcome and vice versa. This study will provide valuable information to obstetricians and fetomaternal specialists allowing them to provide necessary support, reassurance and counseling of parents of preterm babies. But this is not the only study to be relied upon, more studies are needed to conduct long term follow up of preterm babies, in order to detect long term complications of preterm labor.

REFERENCES:
1. Lamont RF. Setting up a preterm prevention clinic: a practical guide. BJOG 2006; 113(3): 86-92

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