Early Neonatal Outcome of Clinically Diagnosed Fetal Distress in Low Resource Areas

Arifa Akhter1, Asma Begum2, Nadira Sultana3, Shampa Saha4, Mubina Nuzhat Chowdhury5, ANM Saifullah6

Abstract

Introduction: Fetal distress is a high risk obstetric situation associated with increased perinatal morbidity and mortality. It is also a major contributor to operative interventions in the majority of hospitals in developing countries. The objective of this study was to observe clinically diagnosed fetal distress and early neonatal outcome after delivery. Materials and Methods: This hospital based cross-sectional study was carried out in Department of Obstetrics and Gynaecology at Bashundhara Addin Medical College Hospital, Keraniganj during the period of January to December 2019. 212 women in active phase of labor at term pregnancy who met the inclusion and exclusion criteria were enrolled. Fetal distress was diagnosed by abnormal FHR and/or presence of meconium in amniotic fluid after rupture of membrane. Neonatal outcome was assessed by 1st & 5th mins Apgar Scores after delivery, babies requiring immediate resuscitation and admission to neonatal care unit & recorded. Result: Among fetal distress 11.32% babies had Apgar score <7 as compared to babies without fetal distress that had 5.66% Apgar score <7 at 5th minutes(p<0.05). 28.3% fetal distressed born babies required NICU admission rather than only 9.44% of without fetal distress. Conclusion: This study shows relative adverse neonatal outcome for fetal distressed babies than without distress.

Keywords: Fetal distress, Apgar scores.

Number of Table: 04; Number of References: 20; Number of Correspondence: 06.

Introduction:
Fetal distress is a widely used but poorly defined term1. Alternative terms Nonreassuring fetal status (NRFS) which indicate that the fetus is compromised. It can be identified by suboptimal values in fetal heart rate, oxygenation of fetal blood & other parameters2. Signs and symptoms of fetal distress include-decreased movement felt by mother (count to ten or Carduff count to 10), meconium in the amniotic fluid, abnormal fetal heart rate (tachycardia > 180 bpm; bradycardia < 110 bpm, cardiotocography (persistent severe variable deceleration) and acid-base of capillary blood PH<7.153,4. Some of these signs are more reliable predictors of fetal distress than others. For example; cardiotocography can give high false positive rates, even when interpreted by highly experienced medical personal. Acidosis is a highly reliable predictor, but is not always available. A highly effective method of assessment of distress would be to use fetal heart rate as a first indicator of distress5. In resource rich countries, the incidence of fetal distress is about 1/1000 live births6. In resource poor countries it is much more common i.e. 5-10/1000 live births7. The etiology of fetal distress may be present before the onset of labor (especially maternal disorder & placental pathology) or occur during labor. About 23-40% of fetal distress occurred in pregnancies with no clinical risk factors8. Male fetuses are at increased risk for fetal distress during labor which is evidenced by low Apgar scores or perinatal death9. The outcome of baby with fetal distress is quite variable. Severity can be ascertained by two clinical methods- (i) Apgar scores (ii) Measurement of degree of acidosis or hypoxia of fetal blood. Low Apgar scores were observed in neonates with moderate or severe fetal distress at delivery9. Severe fetal
distress may result in cerebral oedema, seizures, necrotizing enterocolitis, epilepsy, mental retardation & abnormal physical growth, perinatal death, or still birth but the majority will be normal10. To prevent severity of fetal distress, early diagnosis is to be made by close monitoring during labor and must be treated with intranatere resuscitation technique including correction of maternal hypotension and /or the use of tocolytic agents11. Proper timing of delivery is also necessary. Fetal distress also affects the mode of delivery. Both instrumental as well as caesarean delivery has been found to be increased12. The main objective of this study was to observe early neonatal outcome of clinically diagnosed intrapartum fetal distress in terms of Apgar scores.

Materials and Methods:
This cross-sectional descriptive study was carried out from January 2019 to December 2019 in Obstetrics and Gynae Department at Bashundhara Addin Medical College Hospital, Keranigaon. 212 women in active labor were enrolled for the study. Out of them 106 parturient with fetal distress were included in trial group (group-I) and 106 parturient having no fetal distress in comparison group(group-II). Inclusion criteria were women with ages between 18-35 years, singleton term pregnancy (37-40 weeks) with Cephalic presentation in active phase of labor. Multiple Pregnancy, pre-term labor, malpresentation, H/O lower segment caesarean section, cephalo-pelvic disproportion, pregnancy with medical disorders were excluded from this study. Informed consent was taken & proper ethical clearance was obtained before study. Fetal distress was diagnosed by abnormal FHR and/or presence of meconium in amniotic fluid after rupture of membrane. Assessment of neonatal outcome was observed by, 1st & 5th minutes Apgar scores after delivery. Apgar score <7, babies requiring immediate resuscitation and admission to neonatal care unit were considered as adverse outcome of baby. The data was recorded in a predesigned questionnaires and analyzed by SPSS 22.0 software (SPSS, Inc. USA); for analysis chi-square test, Students T test were done where needed. P value <0.05 was assumed as significant.

Results:
Total 216 parturient were included in the study. During study period 16.4% parturient developed fetal distress. Table –I shows the mode of delivery among the participants. Mode of delivery is significantly influenced by the fetal distress. There was raise of caesarean deliveries (81.13%) in trial group.

Table-I: Mode of delivery among trial and comparison group

<table>
<thead>
<tr>
<th>Mode of delivery</th>
<th>Case Group %</th>
<th>Comparison group %</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVD</td>
<td>18.87</td>
<td>88</td>
</tr>
<tr>
<td>LUCS</td>
<td>81.13</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>106</td>
</tr>
</tbody>
</table>

P value <0.0001

Comparison between case and comparison group was significant. (P<0.0001). Only tachycardia & thin meconium showed no association with low Apgar scores(Table-II).

Table-II: Clinical profile of fetal distress compared with Apgar score.

<table>
<thead>
<tr>
<th>Fetal distress</th>
<th>N</th>
<th>%</th>
<th>A/S&lt;7 at 5 min</th>
<th>A/S&lt;7 at 5 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tachycardia</td>
<td>11</td>
<td>10.37</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>14</td>
<td>13.21</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Thick meconium</td>
<td>40</td>
<td>37.73</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>Thin meconium</td>
<td>32</td>
<td>30.19</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Abnormal FHR=meconium</td>
<td>9</td>
<td>8.5</td>
<td>6</td>
<td>2.84</td>
</tr>
</tbody>
</table>

Total 106 100 12 11.32 94 88.68

The distribution of early neonatal outcomes of two groups have shown in Table-III & IV. In the present study 45.28% of trial group babies had low Apgar score (<7) at 1st minute and 11.32% at 5th minutes as compared to control group where 30.19% and 5.66% had Apgar scores(<7) at 1st minute 5th minutes. A statistically significant difference (p<0.05) was observed in 1st & 5th min Apgar scores & NICU admission. But there was no significant difference for perinatal mortality(p>0.05).

Table-III: Comparison of Apgar score between case & comparison groups.

<table>
<thead>
<tr>
<th>Apgar Score</th>
<th>1 Minute</th>
<th>5 Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>14.71</td>
<td>4.71</td>
</tr>
<tr>
<td>4-6</td>
<td>11.32</td>
<td>4.71</td>
</tr>
<tr>
<td>7-10</td>
<td>11.32</td>
<td>4.71</td>
</tr>
<tr>
<td>Total</td>
<td>11.32</td>
<td>4.71</td>
</tr>
</tbody>
</table>

P value <0.0001

Comparison between case and comparison group was significant. (P<0.0001). Only tachycardia & thin meconium showed no association with low Apgar scores(Table-II).
Table-I: Mode of delivery among trial and comparison group

<table>
<thead>
<tr>
<th>Variable outcomes</th>
<th>Case Group (%)</th>
<th>Comparison Group (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st min apgarscore&lt;7</td>
<td>48 (45.28%)</td>
<td>30(30.19%)</td>
<td>0.02</td>
</tr>
<tr>
<td>5thaminapgarscore&lt;7</td>
<td>12(11.32%)</td>
<td>3(5.66%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Admission in NICU</td>
<td>30(28.30%)</td>
<td>10(9.43%)</td>
<td>0.02</td>
</tr>
<tr>
<td>Perinatal mortality</td>
<td>2(1.89%)</td>
<td>1(0.94%)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Discussion:
The incidence of fetal distress is found to be different in different studies ranging from 6.02% to 22%. In the present study, the proportion is 16.5%. S.S. Bhide, Ramachandra & Gupta et al found the incidence is 6.02%, 9.6% &14.3% respectively\(^{13,14,15}\). Obstetricians feel unsafe about the state of the fetus, if there is abnormal FHR and the amniotic fluid is meconium stained during labor even in places where other facilities of intrapartum monitoring like, fetal blood sampling and cardiotocography are available. This has influenced the mode of delivery. In present study, 81.13% of group I had caesarean delivery as compared to 16.98% in group II. Findings of this study is comparable to the studies done by Cliford et al who found caesarean section rate was 38% in study group and 26% in control group\(^{16}\). In this study caesarean rate is too high as compared to other study, because instrumental delivery was not allowed by our patient. Ramachandra, Sashikala, Krzysztof et al also found increase rate of instrumental and caesarean delivery in fetal distress as compared to control group\(^{17,18}\). But Rossi et al did not find increased operative delivery\(^{19}\). Apgar scores have low predictive value for birth asphyxia as it is also affected by other factors. But in this study, we rely on the findings of apgar scores. In the present study 45.28% of distress born babies had low apgar score (<7) at 1st minute and 11.32% at 5th minutes as compared to control group where 30.19% and 5.66% had Apgar score(<7) at 1st & 5th minutes respectively. These findings are comparable with different other studies. In the study of Ramachandra et al 13% of meconium stained amniotic fluid (MSAF) babies were having low apgar score as compared to only 3.6% in clear liquor group at one minute. At 5 minutes this was 6% in MSAF born babies and 1.8% in clear liquor born babies\(^{14}\). Gupta et al showed 24.5% of distress babies had a low apgar score at one minute compared to 1.1% in without distress born babies\(^{15}\). Ikechebelu JI found 36.5% babies had Apgar scores of 7 and above, while 63.5% had Apgar scores < 7 in fetal distress group\(^{20}\). In present study 28.3% babies were admitted to neonatal care unit among the babies born with distress group compared to only 9.44% of without distress babies, two babies (1.89%) in study group had neonatal death (NND) both were born with thick meconium. Ikechebelu JI found 3.9% perinatal mortality\(^{20}\).

Conclusion:
Clinically diagnosed Fetal Distress is accurate about one half of cases evidenced by low apgar scores which suggests a significant association with early neonatal outcome after delivery. So, immediate delivery is expedient in such cases. Future multicenter study is needed to support or refute the findings of the study.

Conflict of Interest: None.

Acknowledgement:
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Table IV: Distribution of early neonatal outcome between two groups.

<table>
<thead>
<tr>
<th>Variable outcomes</th>
<th>Case Group (%)</th>
<th>Comparison Group (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apgar score&lt;7</td>
<td>48 (45.28%)</td>
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