A Study on Fetal Wellbeing through the Non-Reactive Non-Stress Test in the Patients Referred to Motazedi Hospital, Kermanshah, Iran

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Abstract

A non-stress test is the first step to determine fetal well being. This study was conducted on 323 pregnant patients, referred to Motazedi hospital, Kermanshah, Iran, to justify the non-stress test’s strength. 33.1% were stricken by a fetal distress and 9.9% by meconium passing, around 5% by an Appar elows even, 5.3% were hospitalized at the NICU, and 86.4% were delivered by the cesarean section. It is believed that studied communities’ size might explain the difference between our results and past ones.

Keywords: Non-stress test; Amniotic fluid; Fetal distress; Perinatal mortality

Abbreviations: NST: Non-Stress Test; AFV: Amniotic Fluid Volume; NICU: Neonatal Intensive Care Unit

Introduction

Since 1975, the non-stress test (NST) has been applying as a first step to assess fetal well being. Over past decades, antepartum fetal heart rate testing has become an integral part in high-risk pregnancy management. During this time, the contraction stress test has given way to the non-stress test for primary fetal surveillance due to its proven reliability and its low false negative rate [1-4]. The main feature of normality to interpret the testis FHR accelerations, i.e., reactive tracing. Accelerations, which resemble aspike-like or transitory increase above baseline as a result of sympathetic nervous system stimulation, have been shown to be reassuring both antepartum and intrapartum [1,2,5-7], and indicate a non-acidotic fetus [1,8].

The suggested optimum number of accelerations varies in the literature from one to five over a period of 20 or 30 minutes [9-11]. In contrast, the absence of accelerations (non-reactive tracing) is considered suspicious, and management of a non-reactive NST first requires extension of the recording time to 40-50 minutes. Clinical evaluations performed on shorter time intervals may be misleading [1,12,13]. However, this investigation was conducted to make an appropriate evaluation for the non-reactive NST applicability in order to predict fetal healthy, necessity of an operation special method during parturition, consideration of essential schemes and so on.

Material and Methods

To determine a pregnancy outcome, fetal characteristics and their status through the non-reactive NST, which was performed on 323 pregnant patients with a gestational age over 28 weeks, referred to Motazedi hospital, Kermanshah, Iran, an abidetive form was prepared that the first part was completed at the beginning of hospitalization to consider a maternal age, a gestational age, the history of a previous or a background disease, a reason for performing the test, and the amniotic fluid volume (AFV), and the second one while patient-releasing for gestational finalization, a manner of labour, a fetal distress (meconium passing, tachycardia, bradycardia), infant weight, an infant Apgar, perinatal mortality and hospitalization at the neonatal intensive care unit (NICU). The patients were between 15-46 years old (mean=25.33, STD=5.573, (Figure 1)) and the gestational age was between 37-42 weeks (mean=38.49, STD=2.007, (Figure 2)). Data analysis was statistically performed using the program SPSS (version 16 for Windows; SPSS Inc. Chicago, IL).
## Results

### Reason of performing NST

Out of 323 women, 53 individuals (16.4%) as a result of post dating, 113 persons (35%) because of decreased fetal movement, 126 (39%) for pain, eleven (3.4%) due to a vaginal discharge (suspect in membrane rupture), two (0.6%) due to hemorrhage, eleven (3.4%) as a consequence of decreasing the AFV in the sonogram, two (0.6%) because of a preceding weak NST, two (0.6%) as a result of the diabetes, and three (0.9%) due to fetal wellbeing screening referred to Motazedi hospital, Kermanshah, Iran (Table 1).

### Volume of amniotic fluid

One (0.3%), 269 (83.3%), 53 (16.4%) patients had increased, normal and decreased AFV in the sonography, respectively.

### Accompanying diseases

300 cases (92.9%) had no background disease, 13 (4%) suffered from a gestational hypertension, 7 (2.2%) from the diabetes, and three (0.9%) were afflicted by both.

### Fetal distress during labor

32 cases (9.9%) struck by the meconium stain and 107 ones (33.1%) by the tachycardia or bradycardia during the labor.

### Perinatal mortality

Six cases (1.9%) had perinatal mortality and 17 ones (5.3%) were hospitalized at the NICU.

### Methods of termination of pregnancy

All cases were finalized the pregnancy. Two out of them (0.6%) had an instrumental delivery, 42 (13%) through a normal vaginal delivery (NVD), and 279 (86.4%) by means of cesarean (Figure 3), out of which 56 specimens (20.07%) had a history of cesarean section (repeat CD) (Table 2).

### Apgar in newborn infants

First minute Apgar: one case (0.3%) had a low Apgar (0-3), 13 ones (3.9%) had a medium Apgar (4-6), and 309 ones (95.6%) had a high Apgar (7-10).

Fifth minute Apgar: one case (0.3%) had a low Apgar (0-3), two (0.6%) had a medium Apgar (4-6), and 320 (99%) had a high Apgar (7-10) (Table 3).

### Table 1: Frequency and percent age of doing the non-stress test in 323 pregnant patients.

<table>
<thead>
<tr>
<th>Reason of Reference</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postdate</td>
<td>53</td>
<td>16.4</td>
</tr>
<tr>
<td>motion-deiminution</td>
<td>113</td>
<td>35</td>
</tr>
<tr>
<td>Pain</td>
<td>126</td>
<td>39</td>
</tr>
<tr>
<td>vaginal discharge</td>
<td>11</td>
<td>3.4</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>AF-decreased</td>
<td>11</td>
<td>3.4</td>
</tr>
<tr>
<td>History of weak NST</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>referral of specialist</td>
<td>3</td>
<td>0.9</td>
</tr>
</tbody>
</table>

### Table 2: Frequency and percentage of Methods for termination pregnancy in 322 pregnant patients.

<table>
<thead>
<tr>
<th>Methods</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>NVD</td>
<td>41</td>
<td>12.7</td>
</tr>
<tr>
<td>Caesarean</td>
<td>279</td>
<td>86.4</td>
</tr>
</tbody>
</table>

### Table 3: Frequency and percentage of Apgar in new born infants in two stages-one minute and five minutes after birth.

<table>
<thead>
<tr>
<th>Apgar</th>
<th>Low (0-3)</th>
<th>Medium (4-6)</th>
<th>High (7-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First minute</td>
<td>1(0.3%)</td>
<td>13(3.9%)</td>
<td>308(94.3%)</td>
</tr>
<tr>
<td>Fifth minute</td>
<td>1(0.3%)</td>
<td>2(0.6%)</td>
<td>319(98.7%)</td>
</tr>
</tbody>
</table>

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Weight of infants and hospitalization at NICU

The infants’ weight was between 1500-4650 grand. 17 newborns (5.3%) were hospitalized at NICU (mean=3144.25, STD=463.9, (Figure 3))

Discussion

The NST is the first step to evaluate fetal healthiness. 1% has been considered as a pseudo-negative measure in which fetal fatality occurs during a following weeks in conducting the reactive NST [14]. In order to demonstrate a fetal distress, a profile physical test is usually conducted after the non-reactive NST; in our study, nonetheless, it had not been directed on the instances and they just labored following a non reactive NST due to a complain of pain or decreased fetal movement. Moreover, 33.1% led to a fetal distress (tachycardia or bradycardia), and 86.4% delivered by the cesarean section; whereas, Lohana et al. [14] reported that 46.66% died by the cesarean section and in 8.3% a fetal distress was there as one of cesarean. Verma and Shirmali [15] and Eden et al. [16], however, assigned 63.15% and 37.7% to the fetal distress.

The meconium staining of liquor has variously been announced in publications. Schifrin et al. [17] and Patil and Gharegrat [18] recorded 39.1% and 34%; whereas Bano et al. [19] and Lohana et al. [14] reported 42.8% and 33.3%, respectively. 10% in the present study might be related to a more immediate intervention, cesarean and time wasting to perform complementary tests. In as much as this phenomenon could lead to the meconium aspiration syndrome, the number of 10% could be considered significant. First minute/below seven Apgar was registered as 4.2% where as this type of number were done as 6% and 53.3% in Verma and Shirmali [15] and Lohana et al. [14], respectively. Fifth minute/below seven Apgar in the present research is 0.9%; the numbers of Lohana et al. [14] and Bano et al. [19] were, respectively, 60% and 42.8%. Result data showed that hospitalization of the infants at the NICU is 5.3%, where as it is 28.5% in Bano et al. [19]. The sample sizes in Lohana et al. [14] and Bano [19] were 15 and 12, respectively; whereas it is 323 in the present study. This difference might be responsible for the egregious differences of statistical data.

References
