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 Appgar 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 test is 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, a bipartite 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).

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

| Reason of Reference       | Frequency | Percentage |
|---------------------------|-----------|------------|
| Post date                 | 53        | 16.4       |
| motion diminution         | 113       | 35         |
| Pain                      | 126       | 39         |
| Vaginal discharge         | 11        | 3.4        |
| Hemorrhage                | 2         | 0.6        |
| AF decreased              | 11        | 3.4        |
| History of weak NST       | 2         | 0.6        |
| Diabetes                  | 2         | 0.6        |
| Referral of specialist    | 3         | 0.9        |

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%) striked 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).

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

| Methods      | Frequency | Percentage |
|--------------|-----------|------------|
| Instrument   | 2         | 0.6        |
| NVD          | 41        | 12.7       |
| Caesarean    | 279       | 86.4       |

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

| Apgar   | Low (0-3) | Medium (4-6) | High (7-10) |
|---------|-----------|--------------|-------------|
| First   | 1 (0.3%)  | 13 (3.9%)    | 308 (94.3%) |
| Fifth   | 1 (0.3%)  | 2 (0.6%)     | 319 (98.7%) |
Weight of infants and hospitalization at NICU

The infants’ weight was between 1500-4650 gram. 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 biophysical 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 cesarean section; whereas, Lohana et al. [14] reported that 46.66% died by the cesarean section and in 8.33% a fetal distress was there as one of cesarean. Verma and Shrimali [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. Schiffrin 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 Shrimali [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 323 in the present study. This difference might be responsible for the egregious differences of statistical data.

References

1. Hoh JK, Park MI, Park YS, Koh SK (2012) The significance of amplitude and duration of fetal heart rate acceleration in non-stress test analysis. Taiwan J Obstet Gynecol 51(3): 397-401.
2. Lawrence D, Devoe MD (2008) Antenatal Fetal Assessment: Contraction Stress Test, Non stress Test, Vibro acoustic Stimulation, Amniotic Fluid Volume, Biophysical Profile, and Modified Biophysical Profile-An Overview. Semin Perinatol 32(4): 247-252.
3. Nathan EB, Haberman S, Burgess T, Minkoff H (2000) The relationship of maternal position to the results of brief non stress tests: A randomized clinical trial. Am J Obstet Gynecol 182(5): 1070-1072.
4. Wu ET, Lin TH, Lin CH, Lee CN (2014) Left ventricular assist device for stress-induced cardiomyopathy after postpartum hemorrhage. Taiwan J Obstet Gynecol 53(3): 429-431.
5. Huang YE, Chen WC, Tseng JJ, Ho ESC, Chou MM (2012) Fetal Intracranial Hemorrhage(FetalStroke): Report of Four Antenatally Diagnosed Cases and Review of the Literature. Taiwan J Obstet Gynecol 2006; 45(2): 135-141.
6. Maeda K, Utsu M, Makio A, Serizawa M (1998) Neural network computer analysis of fetal heart rate. J Matern Fetal Investig 8(4): 163-171.
7. Shaw SW, Chen CP, Cheng PJ (2013) From Down syndrome screening to non invasive prenatal testing: 20 years’ experience in Taiwan. Taiwan J Obstet Gynecol 52(4): 470-474.
8. Todros T, Preve CU, Plazzotta C, Bioletti M, Lombardo P (1996) Fetal heart rate tracings: observer versus computer assessment. Eur J Obstet Gynecol Reprod Biol 68(1-2): 83-86.
9. Bracero LA, Morgan S, Byrne DW (1999) Comparison of visual and computerized interpretation of non stress test results in a randomized controlled trial. Am J Obstet Gynecol 181(5): 1254-1258.
10. Spencer JA (1990) Modern antenatal care of the fetus. Blackwell Scientific Publications, pp. 163-188.
11. Tongprasert F, Jinpala S, Srirupandit K, Tonggong T (2006) The rapid biophysical profile for early intrapartum fetal well-being assessment. Int J Gynecol Obstet 95(1): 14-17.
12. Kashanian M, Jawadi F, Haghhighi MM (2010) Effect of continuous support during labor on duration of labor and rate of cesarean delivery. Int J Obstet Gynecol 109(1): 198-200.
13. Tsai HF, Cheng YC, Ko HC, Kang L, Tsai PY, et al. (2013) Prenatal diagnosis of fetal gastroschisis is using three-dimensional ultrasound: Comparison between the 20th and 21st centuries. Taiwan J Obstet Gynecol 52(2): 192-196.
14. Lohana RU, Khatri M, Hariharan C (2013) Correlation of non stress test with fetal outcome in term pregnancy (37-42 Weeks). Int J Reprod Contracept Obstet Gynecol 2(4): 639-645.
15. Verma A, Shrimali L (2012) Impact of admission non stress test as a screening procedure on perinatal outcome. IJMPS 3(5): 06-10.
16. Eden RD, Siefert LS, Koack LD, Trofatter KF, Killam AP, et al. (1988) Computer analysis of fetal heart rate. J Matern Fetal Investig 8(4): 163-188.
17. Schiffrin BS, Foey G, Amatoj, Kates R, Mac Kenna J (1997) Routine fetal heart rate monitoring in the antepartum period. J Obstet Gynecol 54(1): 21-25.
18. Patil SK, Gharegrat RH (1993) Correlation of NST and amniotic fluid volume in antenatal fetal monitoring. J Obstet Gynecol India 43: 178.
19. Bano I, Noor N, Motwani L, Arshad Z (2012) Comparative study of Non stress Test and Fetal Acoustic Stimulation of Assessment of Fetal Wellbeing. Int Sci J Jaypee 3(2): 168-171.
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