riginal Research Article

Correlation of admission labour admission test in low risk pregnancies with pregnancy outcome

Preeti Sharma[1], Nikita Gandotra[1]*, Deepti Rana[1], Sabia Rasheed[2], Anil Kumar Sharma[2]

[1]Department of Obstetrics and Gynecology, Dr. RPGMC Tanda, Kangra, Himachal Pradesh, India
[2]Department of Obstetrics and Gynecology, Government Medical College, Srinagar, Jammu and Kashmir, India

*Correspondence:
Dr. Deepti Rana,
E-mail: ranadeepti2012@gmail.com

ABSTRACT

Background: Aim of the study was to evaluate the role of NST (labour admission test) as a screening method in management of low risk pregnancies and to study the correlation of NST with fetal outcome.
Methods: A prospective observational study conducted over 500 patients managed at our centre after proper evaluation. Patients were evaluated for mode of delivery and neonatal outcome.
Results: The maximum number 352 of patients belonged to 20-30 years age group, 113 patients belonged to 31-35 age group. 200 patients were of 37-40 weeks gestation and 185 were of 40-41 weeks gestation. There were 125 patients in the 41-42 weeks gestational period. Among the 500 pregnant mothers who were included in the study 82.6% had Normal NST, 11.6% had suspicious and 5.8% had pathological NST. Cesarean rate was 14.4% in normal NST group, 58.62% in suspicious group and 72.41% in pathological group study. 6.77% in Normal group had meconium stained liquor at delivery whereas 29.31% in suspicious group and 37.93% in pathological group had same.
Conclusions: The non-stress test is an important screening tool to identity the fetus in jeopardy in utero. This enables an appropriate timely intervention to achieve the most favorable outcome.

Keywords: Apgar score, Fetal distress, Low risk pregnancy, NST

INTRODUCTION

A record of fetal heart rate and uterine activity using the cardiotocograph for about 20 minutes on admission to the labour ward is called a labour admission test or admission NST. Though there is no conclusive evidence to support the use of Labour admission test in every patient, the justification to perform LAT is to triage the patients who need more intensive monitoring in labour or immediate delivery.[1] About 50% of fetal death occurs in low risk mothers without apparent cause.[2] Although many technologies have been developed for monitoring fetus in high risk mothers, we should not under-estimate fetuses of low risk mothers as they are equally precious.[3] Continuous electronic monitoring is not possible throughout labor in low resourced countries and hence admission non stress test may be a better alternate option in developing countries. Admission NST will detect high risk fetus in low risk mothers and further monitoring will be decided on basis of that. NST is easy to perform and normal NST predicts good fetal wellbeing. It can identify fetuses that present with fetal heart abnormalities suggestive of chronic hypoxia or pre-labour acidosis. This enables an appropriate timely intervention to achieve the most favourable outcome.

The objective of this study was to evaluate the role of NST as a screening method in management of low risk pregnancies admitted in labor room. And to study the correlation of NST with fetal outcome.

METHODS

It was a prospective observational study conducted in the Department of Gynecology and Obstetrics, Dr RPGMC Tanda, Kangra, Himachal Pradesh over a period of 1 year. About 500 women with low risk pregnancies with established labor admitted in labor room were included in the study.

Inclusion criteria

- Singleton pregnancy
- Gestational age between 37completed weeks to 42 weeks.

Exclusion criteria

- Pregnancies <37 weeks of gestation
- Pregnancies with known congenital anomalies, malpresentations, IUGR, preterm labor, ante-partum hemorrhage, PIH, Diabetes, Cardiac Disease, multiple pregnancies, patients with false labour pains, patients with an admission to delivery interval more than 24 hours and patients undergoing elective caesarean section.

A preliminary history was taken and a general and obstetric examination was done. All the patients admitted with established 1st stage of labor were subjected to admission NST.

Table 1: Classification of individual FHR features (Intrapartum Care Guidelines of the National Institute of Health and Clinical Excellence-NICE 2007).[5]

Feature	Baseline rate (bpm)	Variability	Decelerations	Accelerations
Reassuring	110-160	>5	None	Present
Non-reassuring	100-109	<5 for >40 minutes but <90 minutes	Typical variable decelerations with over 50% of contractions for >90 minutes	The absence of accelerations with an otherwise normal CTG is of uncertain significance
	161-180		Single prolonged deceleration <80 bpm upto 3 minute	
Abnormal	<100	<5 for >90 minutes	Atypical variable or late or both decelerations occurring over 50% of contractions in a 30 minute period OR Single Prolonged deceleration <80bpm for >3 minutes	
	>180			
	Sinusoidal pattern for >10 minutes			
Classification of CTG (Taking into consideration all the four features of the CTG according to Intrapartum Care NICE Guidelines-2007)				
Category	Definition			
Normal	A CTG where all four features are classified as reassuring			
Suspicious	A CTG where one feature is classified as non-reassuring and the other features are reassuring			
Pathological	A CTG where two or more features are classified as non-reassuring or one or more classified as abnormal			

All patients admitted for induction had cervical priming with intracervical prostaglandin E2 gel. The admission test for these patients was done once they started having uterine contractions. The test was done for 20 minutes with patient in left lateral position. If NST result was reactive, those fetuses were considered as low risk and Patients with a normal admission test were monitored by intermittent auscultation for one minute, every 30 min in the first stage of labour and every 5 min in the second stage of labour. Those having suspicious or pathological FHR tracings were placed on continuous CTG monitoring. The patients were then followed up for the mode of delivery and the different variables of perinatal outcome collected at the time of delivery. All the patients delivered within 24 hours of the admission test. On the NST trace, the upper channel has the fetal heart rate recording and the lower channel has the contraction recording. Four features related to the FHR were identified; the baseline rate, baseline variability, accelerations and decelerations. Based on the description of these four features, the CTG trace is classified as normal, suspicious or pathological. The National Institute of Clinical Excellence (NICE) and the Royal College of Obstetricians and Gynaecologists (RCOG) have categorised the FHR features and traces as normal, suspicious and pathological.[4]

RESULTS

The maximum number 352 of patients belonged to 20-30 years age group, 113 patients belonged to 31-35 age group. 30 patients were above 35 years of age and 5 were less than 20 years of age. The study population comprised of 276 primigravida and 224 multigravida. 200 patients were of 37-40 weeks gestation and 185 were of 40-41 weeks gestation. There were 125 patients in the 41-42 weeks gestational period. Off the total 500 patients, 389 were admitted with spontaneous labour pains and 111 for

induction of labour. The cesarean section rate was 14.04% in normal NST group, 58.62% in suspicious NST group and 72.41% in pathological group (Table 2).

Table 2: Mode of delivery in all types of NST result.

NST	Total cases	Full term normal delivery	Instrumental delivery	Cesarean section
Normal	413	350 (84.7%)	5 (1.21%)	58 (14.04%)
Suspicious	58	21 (36.20%)	3 (5.17%)	34 (58.62%)
Pathological	29	8 (27.58%)	0	21 (72.41%)

Table 3: Indication of LSCS in all types of NST result.

Indication	Reactive	Suspicious	Pathological
Fetal distress	12 (29%)	19 (32.75%)	24 (82.75%)
Failure of induction	7 (12.6%)	2 (3.4%)	1 (3.44%)
Non progression of labour	15 (25.80%)	4 (6.8%)	2 (6.89%)
CPD	24 (41.37%)	9 (15.5%)	2 (6.89%)

Table 4: Correlation of NST with meconium stained liquor.

Result of NST	Liquor clear	Liquor meconium stained
Normal	385 (93.22%)	28 (6.77%)
Suspicious	41 (70.68%)	17 (29.31%)
Pathological	18 (62.06%)	11 (37.93%)

Table 5: Correlation of NST with 1 minute APGAR score.

Result of NST	APGAR > 7	APGAR<7
Normal	389 (94.18%)	29 (5.81%)
Suspicious	41 (70.68%)	17 (29.31%)
Pathological	11 (37.93%)	18 (62.06%)

Table 6: Correlation of NST with 5 minute APGAR score.

Result of NST	APGAR > 7	APGAR<7
Normal	405 (98.06%)	8 (1.93%)
Suspicious	48 (82.75%)	10 (17.24%)
Pathological	15 (51.72%)	14 (48.27%)

Table 7: Distribution of study group according to neonatal outcome and NST.

Neonatal outcome	Cases	Normal	Suspicious	Pathological
Birth asphyxia	44	12 (27.27%)	14 (31.81%)	18 (40.90%)
Low birth weight	57	29 (50.87%)	18 (31.57%)	10 (17.54%)
Meconium aspiration	25	5 (25%)	7 (28%)	13 (52%)
NICU admission	52	14 (26.92%)	17 (32.69%)	21 (40.38%)
Ventilator	10	2 (20%)	3 (30%)	5 (50%)
Perinatal mortality	1	0	0	1 (100%)

The most common indication of cesarean section was fetal distress followed by failure of induction, non progression of labour and CPD in all NST groups (Table 3). Out of 385 patients in normal NST group, only 28 (6.77%) had meconium stained liquor whereas 11 (37.93%) patients in pathological group had meconium stained liquor (Table 4).

One-minute apgar score was more than 7 in 94.18% patients in normal NST group, 70.68% in suspicious NST group and 37.93% patients in pathological NST group (Table 5). The neonatal outcome was poor in pathological NST group as compared to suspicious and normal group. In pathological NST group, 18 neonates had birth asphyxia, 10 neonates were low birth weight,

13had meconium aspiration, 21 neonates were admitted to NICU and 5 neonates were put on ventilator support (Table 7).

DISCUSSION

Admission NST is a valuable tool to identify high risk fetuses so that timely intervention can be undertaken. A reactive NST is a reliable indicator of fetal well being in term fetus. The false negative rate of NST is defined as fetal death within 1 week of a reactive NST which is less than 1%. Among the 500 pregnant mothers who were included in the study 82.6% had Normal NST, 11.6% had Suspicious and 5.8% had pathological NST. In the study done by Shrestha P et al, 81% had reactive, 9% had equivocal and 10% had ominous result.[6] Cesarean rate was high in patients with pathological NST.

In this study, cesarean rate was 14.04% in normal NST group, 58.62% in suspicious group and 72.41% in pathological group. In the study done by Patel S et al LSCS rate was 14.84% in Reactive group and 66.66% in Non reactive group.[3] Similarly, findings were noted in study done by Verma A, where patients with reactive NST had less intervention.[7] In present study 55 out of 113 patients underwent LSCS for fetal distress out of which, 43.63%% patients had preceding pathological NSTs and 21.81% had reactive NSTs. This was comparable to the study done by Lohana RU et al, where 75% had preceding nonreactive NST.[8] In our study 6.77% patients in Normal NST group had meconium stained liquor at delivery whereas 29.31% in suspicious group and 37.93% in pathological group had same. In the study done by Patel S et al, 7.7% of reactive NST and 44.4% of nonreactive NST had meconium stained liquor.[3] 94.18% from Normal group had APGAR score more than 7, 5.8% of them had APGAR less than 7 whereas only 37.93% in pathological group had APGAR score more than 7 at 1 minute and 62.05% had APGAR score less than 7. 98.06% in normal group had APGAR score more than 7 at 5 minute whereas only 51.72% in pathological group had APGAR more than 7 at 5 minute. Our observation was comparable with study conducted by Bano et al, the APGAR score <7 at 5 minutes was 3.4% in the reactive NST group whereas 42.8% in the non reactive group.[9]

CONCLUSION

Doppler Non stress test is a simple, non invasive test which can be used as a good predictor of the healthy foetus in normal pregnancies between 37-42 weeks of gestation. A reactive non stress test is more reliable in excluding fetal hypoxia than anon reactive test in predicting fetal compromise. However no abnormal test should be ignored and all abnormal tests should be followed up with a second line test such as the biophysical profile before planning any intervention.

REFERENCES

1. Devane D, Lalor JG, Daly S. Cardiotocography versus intermittent auscultation of fetal heart on admission to labour ward for assessment of fetal well being. Co Data of Syst Rev. 2017;1:005122.
2. Yucel A, Yilmazer M, Acar M. Comparison of Doppler indices and non-stress test values according to foetal sex in normal term pregnancies. The Med J Kocat. 2005;6(1):19-24.
3. Patel S, Gupta S, Modi K, Desai A, Shah S, Pamnani D. Correlation of admission NST in low risk pregnancy with neonatal outcome. Am J Ethnomed. 2015;2:2.
4. Freeman RK, Garite TH, Nageotte MP. Fetal heart rate monitoring. 3rd ed. Lippincott Williams and Wilkins Philadelphia, 2003.
5. National Institute for Health 2007. Available at; Http://www.nice.org.uk/nicemedia/pdf/IPCNICEgui dance,pdf.
6. Shrestha P, Misha M, Shrestha S. A prospective study on impact of non stress test in prediction of pregnancy outcome. Am J Pub Health Res. 2015;3(4):45-8.
7. Verma A, Shrimali L. Impact of admission Non stress test as a screening procedure on perinatal outcome. Int J Sci Res. 2012;3(5);6-10.
8. Lohana RU, Khatri M, Hariharan C. Correlation of non-stress test with foetal outcome in term pregnancy (37-42 weeks). Int J Reprod Contracept Obstet Gynecol. 2013;2(4);639-45.
9. Bano I, Noor N, Motwani L, Arshad Z. Comparative study of Non stress test and Foetal acoustic stimulation of assessment of foetal well being. Journal of South Asian Federation of Obstetrics & Gynaecology-Jan- April 2011:3(1):6-9.