Original Research Paper

Volume - 13 | Issue - 02 | February - 2023 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Obstetrics & Gynaecology

# ROLE OF NST IN THE MANAGEMENT OF HIGH RISK PREGNANCIES IN TERM GESTATION - A COMPARITVE STUDY

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**ABSTRACT** **Introduction:** In developing countries, maternal morbidity has been significantly decreased so now modern obstetricians are focusing more on fetal health. Initially fetus was considered only as an outcome of pregnancy but now-a-days the fetus is considered as the second person. So it also requires as much surveillance as the health of mother. In modern obstetrics methods for fetal risk determination have shifted from less specific biochemical methods (e.g. maternal estriol determination) to more specific fetal biophysical methods. Non stress test is one of the biophysical techniques, which is widely used in the management of high risk pregnancies. With the acceptance of 'small family norm', it has become necessary that every wanted conception should successfully end in birth of a viable healthy baby. The non-stress test can identify the fetus in jeopardy in utero. **Methodology:** This clinical study was conducted at KVG Medical College and Hospital, in the department of Obstetrics and Gynaecology over a period of 1year from February 2021- February 2022. The study included 50 High Risk pregnant women in study group (selected based on inclusion and exclusion criteria) and 50 Low Risk pregnant women as control group who were enrolled and evaluated by NST from 37- 41 weeks of gestation. **Results:** NST results shows that in low risk group 76% were reactive and 24% was non-reactive. In high risk group it was 66% in Reactive and 34% non-reactive. Most (74%) of the subjects delivered normally in low risk group whereas in high risk group 50 % delivered normally and 50% underwent LSCS. In low risk group, 18.4% cases of reactive NST underwent LSCS and 50% of cases with non-reactive NST underwent LSCS. The mean NICU admission in reactive of low risk is 2.579 and that of non-reactive is 3.25. But in High risk group the NICU admission days in reactive group is 4.67 and that of non-reactive is 5.882. **Conclusion:** The antenatal surveillance of high risk pregnancies with NST can effectively screen for identification of high risk fetuses and segregate the population that is at risk for perinatal mortality and morbidity.

**KEYWORDS :**

## INTRODUCTION

The antepartum evaluation of fetal wellbeing is now an essential part of management of all pregnancies. Different biochemical, biophysical systems have been devised to assess the fetus in-utero. The basic role of different antepartum assessment systems is to recognize fetal distress in order to forestall fetal death. Generally, obstetricians have a tendency to categorize pregnant ladies as "low" and "high" risk. Although some efficient strategies are accessible for dealing with the high-risk, we need more efficient methods for identifying pregnant women in distress in the low-risk group as well.

Initially fetus was viewed just as a result of pregnancy however now-a-days the fetus is considered as second patient. So it also requires as much reconnaissance as the wellbeing of mother. In modern obstetrics methods for fetal risk determination have shifted from less specific biochemical methods (e.g. maternal estriol determination) to more specific fetal biophysical methods. Non stress test is one of the biophysical techniques, which is widely used in the management of high risk pregnancies. The non-stress test can identify the fetus in jeopardy in utero.[1] Non stress test (NST) is a graphical recording of fetal heart rate reactivity to fetal movements. It is one of the most widely used primary testing methods for antepartum surveillance. It is simple, inexpensive, non-invasive, easily performed and interpreted. NST was repeated weekly or biweekly according to indication. Cases were followed up till the delivery and data regarding mode of delivery and perinatal outcome were noted.[2] High risk pregnancies require sophisticated maternal and fetal surveillance. Fetal morbidity and mortality are greater in high risk women, such as those with prolonged pregnancy, intrauterine growth restriction (IUGR), hypertension or other risk factors.[3] For detecting high risk fetus, NST is a simple screening procedure and is helpful in decreasing perinatal morbidity and mortality.

## AIMS AND OBJECTIVES OF STUDY

- To evaluate the efficacy of NST for antenatal surveillance.
- To correlate the test results with mode of delivery.
- To correlate the test results with perinatal morbidity.

## MATERIALS AND METHODS

This clinical study was conducted at KVG Medical College and Hospital, on patients attending outpatient department or admitted as in patient in department of Obstetrics and Gynaecology over a period of 1year from February 2021 – February 2022, after obtaining clearance from the ethical committee.

The study included 50 High Risk pregnant women in the study group-selected based on inclusion and exclusion criteria and 50 Low Risk pregnant women in the control group will be randomly enrolled into study and were evaluated by NST from 37 weeks of gestation onwards or whenever risk factor was identified and repeated at appropriate intervals as per subjective results in cases of high risk group.

### Inclusion Criteria

- Singleton, non-anomalous pregnancies of 37-41 weeks or more weeks of gestation.
- Patients with clinically suspected or diagnosed cases of IUGR or Pre eclampsia or chronic hypertension or diabetes mellitus or previous fetal demise or decreased fetal movements or severe anemia or third trimester bleeding or post-dated pregnancy or Rh isoimmunization or PROM or advanced maternal age (>35 yrs) are included in the study

### Exclusion Criteria

1. Gestational age of < 37 weeks.
2. Multiple gestation.
3. Malpresentations, cephalo pelvic disproportion and patients with previous LSCS.
4. Major congenital anomaly of the fetus detected by routine antenatal ultrasound scanning.

### Procedure Of The Study-

For all the pregnant ladies above 37 weeks of gestation detailed history and examination will be done. Informed consent will be taken.

Women with high risk patients were enrolled into the study and were followed up with NST (non-stress test) from 32 weeks of gestation onwards and repeated at appropriate intervals. 50 high risk patients (study group) and 50 low risk patients (control group) were studied

## RESULTS

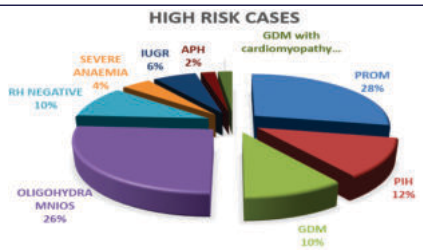


**Table 1: Distribution Of Patients Based On Nst Results**

| | | GROUP | | TOTAL |
|---|---|---|---|---|
| | | LOW RISK | HIGH RISK | |
| REACTIVE | NUMBER | 38 | 33 | 71 |
| | % | 76.0% | 66.0% | 71.0% |
| NON REACTIVE | NUMBER | 12 | 17 | 29 |
| | % | 24.0% | 34.0% | 29.0% |

NST results shows that in low-risk group 76% were reactive and 24% was non-reactive. In high-risk group it was 66% in Reactive and 34% non-reactive.

**Table 2: Distribution Of Cases In Low Risk And High Risk Groups Based On Mode Of Delivery And Nst Result**

| Mode of delivery | Low risk group | | High risk group | |
|---|---|---|---|---|
| | R (%)[n=38] | NR (%) [n=12] | R(%)[n=33] | NR (%) [n=17] |
| Vaginal | 31(81.6%) | 6(50%) | 19(57.6%) | 6(35.3%) |
| LSCS | 7(18.4%) | 6(50%) | 14(42.2%) | 11(64.7%) |

In low risk group, 18.4% cases of reactive NST underwent LSCS and 50% of cases with non reactive NST underwent LSCS. In high risk group, 42.4% of cases with reactive NST underwent LSCS where as 64.7% of cases with non reactive NST underwent LSCS.

**Table 3 : Distribution Of Cases Who Had Nicu Admission In Low Risk And High Risk Group Based On Nst Results**

| GROUP | NST RESULTS | N | MEAN | SD | t |
|---|---|---|---|---|---|
| Low risk | Reactive | 38 | 2.579 | 1.368 | 1.484 |
| | Non- reactive | 12 | 3.250 | 1.357 | p=0.144(n-sig) |
| High risk | Reactive | 33 | 4.667 | 1.339 | 2.604 |
| | Non- reactive | 17 | 5.882 | 1.933 | p= 0.012(sig) |

The mean NICU admission in low risk group with reactive nst is 2.579 and that of non reactive is 3.25 and the difference is found to be non significant.

But in High risk group the NICU admission in reactive group is 4.67 and that of non reactive is 5.882 and that difference was found to be significant (p=0.012).

## DISCUSSION

In the present study, observation correlate shows that the maximum number of patients ( 43%) were from the age group 26 - 30 , followed by 32% from the age group 21- 25.

As seen in the study, among low risk group 76% had reactive NST and 24% had non reactive NST. Among high risk group 66% had reactive NST and 34% had non reactive NST, which is similar to study by Nochimson D J et al.[4]

In our study , 71 patients having reactive NST 29.5 % underwent caesarean section , while out of 29 patients having non reactive NST , 58.6% had caesarean section. This shows that a significant number of patients underwent caesarean section when NST is non reactive. It was similar to the study done by Verma A, Bhide AA where Reactive NST had less intervention.[5,6]

Operative delivery was more common in non reactive NST in the study done by Hafizur R and Ingemarsson I.[7,8]

In our study, incidence of NICU admission is higher in non reactive group as compared to babies of reactive group. Similar findings were noted in the study conducted by Kamal Buckshee et al.[9]

### Limitations

Limitations of the study include:- small sample size, strict randomization was not done.

## CONCLUSION

- The antenatal surveillance of high risk pregnancies with NST can effectively screen for identification of high risk fetuses and segregate the population that is at risk for perinatal mortality and morbidity.
- The potential advantage of NST is that, a decrease in decision to delivery time can be made for those patients with fetal distress so that a major improvement in the outcome among parturients can be achieved.
- The use of NST in monitoring high risk pregnancies may result in an increase in incidence of operative delivery as seen in our study.
- In conclusion NST is a valuable screening test for detecting fetal compromise in both HR and LR fetuses that may have poor perinatal outcome. But, larger randomised controlled trials are needed to know if the use of NST in HR and LR pregnancies for antenatal surveillance, benefit by reduction in the incidence of adverse perinatal outcome.

### Summary

- The incidence of non-reactive NST result was 34% in high risk group and 24% in low risk groups.
- The LSCS rate was higher in HR group (50%) when compared to LR group (26%).
- Among high risk group, MSAF was seen in 12.1% of reactive cases and 29.4% of non reactive cases.
- Incidence of NICU admission is higher in non reactive group as compared to babies of reactive group.
- Perinatal mortality occurred among 5 cases in high risk group and 1 case in low risk group.
- Hence the sensitivity of NST in low risk group was 100% in predicting perinatal mortality while the sensitivity in high risk group was 80%.
- On the other hand, the sensitivity and PPV is found to be 80% and 23.5% respectively in high risk group and 100% and 8.3% in low risk group. This 100 shows that a reactive test is an excellent indicator of a healthy fetus especially in the low risk group.

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