

COMPARISON OF VIBROACOUSTIC STIMULATION TEST & NON STRESS TEST IN HIGH RISK PREGNANCIESPuneeta Kaur Arora¹, Beena Bhatnagar²**HOW TO CITE THIS ARTICLE:**

Puneeta Kaur Arora, Beena Bhatnagar. "Comparison of Vibroacoustic Stimulation Test & Non Stress Test in High Risk Pregnancies". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 48, June 15; Page: 8278-8282, DOI: 10.14260/jemds/2015/1201

ABSTRACT: INTRODUCTION: Several studies show that fetal sleeping periods can lead to falsely non-reactive test, therefore increasing the risk of unnecessary obstetric intervention. Attempt to arouse the fetus while in sleeping state or in rest activity cycle include a change in maternal position, physical activity, maternal glucose ingestion, sound stimulation, light stimulation and manual fetal manipulation. However the only stimuli that have consistently evoked response in normal fetus are acoustic and vibrotactile ones. **AIMS & OBJECTIVES:** 1. To compare and evaluate the role of non-stress test and vibro acoustic stimulation test on the perinatal outcome. 2. To evaluate vibro acoustic stimulation test as a screening test for early intrapartum fetal monitoring. **MATERIAL AND METHODS:** This study was done at department of OBGY, NIMS, hospital Jaipur. It included 100 women with high risk pregnancies above 34 weeks of gestation. Fetal monitor was used for non-stress test, and acoustic stimulator by teksonic instrument with sound pressure 80-85db for vibro acoustic stimulation test. It is a cross sectional study. **OBSERVATION & RESULTS:** High risk pregnant women showed (75%) 75 cases positive test which included (Reactive nst with reactive vast and also with reactive vast over non-reactive nst) out of which 62 cases (82.6%) were with favourable perinatal outcome and 13cases (17.3%) with unfavourable perinatal outcome. **CONCLUSION:** Result showed that in the high risk pregnancies after vibroacoustic stimulation test were significantly associated with favourable perinatal outcome.

KEYWORDS: Vibroacoustic stimulation test as adjunct to non-stress test for antepartum fetal well-being.

INTRODUCTION: Fetal vibroacoustic stimulation was first noted in 1947 by Bernard and Sontag⁽¹⁾ who observed that the fetal heart rate accelerated after acoustic stimulation⁽²⁾ correlated fetal movements with fetal well-being.

In modern obstetrics fetal vibroacoustic stimulation used as artificial larynx placed on mother's abdomen over the fetal head region. This is expected to induce a startle reflex in the fetus, with subsequent fetal movement and fetal heart rate acceleration.⁽³⁾ Hence vibro acoustic stimulation test provides reassurance of fetal well-being.

However the only stimuli that have consistently evoked response in normal fetus are acoustic and vibroacoustic ones.

This acoustic stimulation test offers an advantage over NST by lowering both the incidence of non-reactive test and testing time and could thus use as a test of fetal assessment.

NST with improved acoustic stimulation is a convenient, fast, safe, and effective method on detecting false non-reacting NST and it can increase the specificity of NST.⁽⁴⁾

So, in order to identify non-reactive results and to avoid unnecessary intervention and additional acoustic stimulation test will be effective in identification of false positive NSTs.⁽⁵⁾

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AIMS AND OBJECTIVES:

1. To compare and evaluate the role of non-stress test and vibro acoustic stimulation test on the perinatal outcome.
2. To evaluate vibro acoustic stimulation test as a screening test for early intrapartum foetal monitoring.

MATERIAL & METHODS: Done at department of OBGY, NIMS hospital, Jaipur. During November 2013 to June 2014 which included 100 women with high risk pregnancies above 34 weeks of gestation. It is cross sectional study.

Equipment's used:

1. Foetal heart rate recording was done on featal monitor for NST.
2. Acoustic stimulator by Teksonic instrument with sound pressure 80-85 db for vibro acoustic stimulation test.

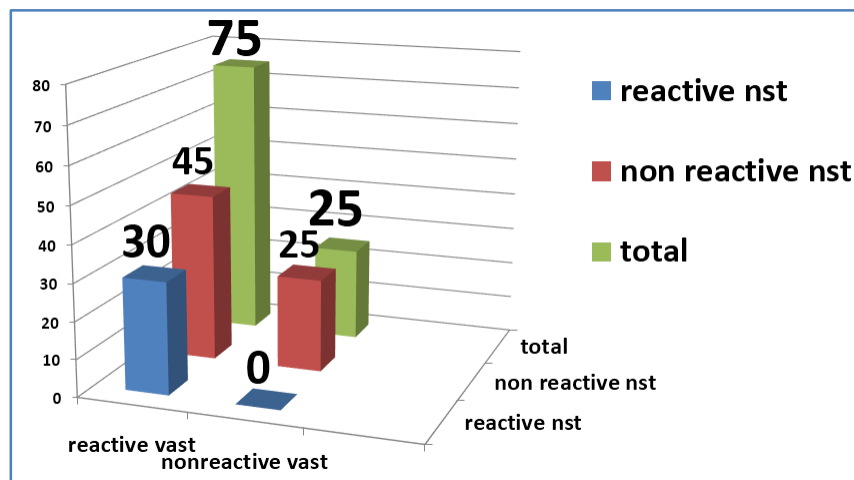
NST & VAST was done on the patients admitted to the labour room at NIMS Hospital, dept. of OBGY. After a detailed history and clinical examinations, all patients were subjected to NST. Interpretation of NST was done according to American College of Obstetrics & Gynaecology. Than acoustic stimulator was used less than 3 seconds. If no quantifying acceleration noted, then stimulus was repeated at 1 minute interval for maximum of 3 times & recording was done for 5 minutes. This was the interpretation of VAST. All patients was carefully followed during labour to find out the favourable and unfavourable perinatal outcome.

Unfavourable outcome as (Apgar score <5, nicu admission, birth asphyxia, delayed cry, meconium stained liquor, iud).

RESULTS:

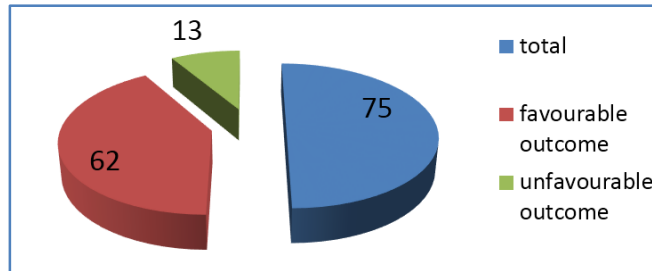
POSITIVE CASES	REACTIVE NST
	REACTIVE VAST
	REACTIVE VAST OVER NONREACTIVE NST

NEGATIVE CASES	NONREACTIVE NST
	NONREACTIVE VAST



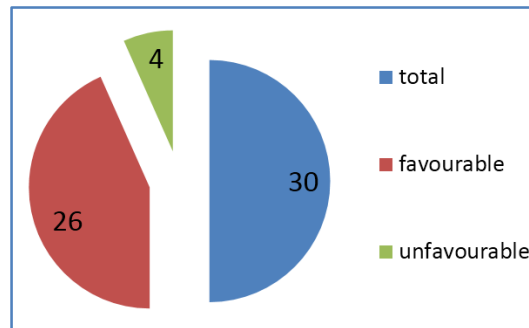
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High risk pregnant women showed (75%) 75 cases positive test which included (reactive NST with reactive VAST and also reactive VAST over non-reactive NST) & (25%) 25 cases negative test which included (non-reactive NST with non-reactive VAST and reactive NST with non-reactive VAST).



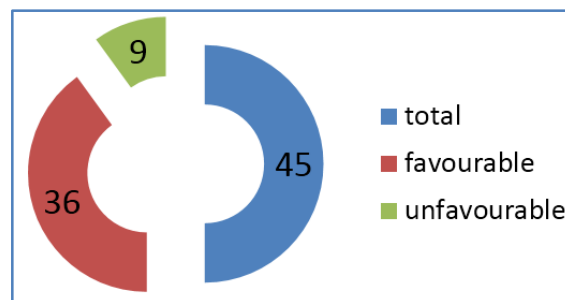
75 cases positive test which included (Reactive nst with reactive vast and also with reactive vast over non-reactive nst).

TOTAL	FAVOURABLE PERINATAL OUTCOME	UNFAVOURABLE PERINATAL OUTCOME
100%	(82.6%)	(17.3%)



With 30 cases of (Reactive nst with reactive vast) showed 26 cases favourable perinatal outcome and 4 cases with unfavourable perinatal outcome.

TOTAL	FAVOURABLE PERINATAL OUTCOME	UNFAVOURABLE PERINATAL OUTCOME
100%	(86%)	(13.3%)



With 45 cases of (Reactive vast over non-reactive nst) showed 36 cases with favourable perinatal outcome and 9 unfavourable outcome.

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TOTAL	FAVOURABLE OUTCOME	UNFAVOURABLE OUTCOME
100%	(80%)	(20%)

DISCUSSION: Vibroacoustic stimulation offers a unique opportunity to assess how the fetus responds to the external environment. Fetal VAS is commonly used for both antepartum & intrapartum testing. It is considered a simple and reliable prognostic evaluation of abnormal FHR detection.

Interestingly, a study⁽⁶⁾ performing a linear and nonlinear fetal heart rate analysis in normal and acidemic fetuses before delivery showed that, with the progression of the labor, a significant increase in linear frequency domain indices and a significant decrease in nonlinear indices became evident. Bernardes et al.⁽⁷⁾ hypothesized that fetal sex differences could affect the FHR response to VAS.

From our results, we can state that fetuses respond to vibroacoustic stimulation accelerating their FHR: High risk pregnant women showed (75%) 75 cases positive test which included (Reactive nst with reactive vast and also with reactive vast over non-reactive nst) out of which 62 cases (82.6%) were with favourable perinatal outcome and 13 cases (17.3%) with unfavourable perinatal outcome. With 30 cases of reactive nst with reactive vast showed 26 cases (86%) favourable perinatal outcome and 4 cases (13.3%) with unfavourable perinatal outcome. And with 45 cases of reactive vast over non-reactive nst showed 36 cases (80%) with favourable perinatal outcome and 9 cases (20%) unfavourable outcome.

This result makes these cCTG parameters a useful tool in the evaluation of fetal neuronal response. Especially noteworthy is the significant association of a positive VAS test with perinatal conditions in high-risk pregnancy, between the 28th and the 36th week of gestation. This result could be explained with the development of the auditory apparatus, which occurs in that period. Indeed, vibroacoustic stimulation elicits a neural response in the fetus, from the auditory sensory system to the central level, whose response is able to trigger the autonomic mechanisms responsible for the regulation of the FHR.

This is to confirm the importance of the use of Vas test inside the cCTG analysis as a predictive tool of conditions at birth. Moreover, our findings can be seen as a confirmation of what Gonçalves et al.⁽⁶⁾ hypothesized, that is, an increase in the autonomic nervous system activity and a decrease in the central nervous system activity, when a stress condition occurs (The final minutes of labor in Gonçalves' study and the vibroacoustic stimulation in the present study).

CONCLUSION: The identification for the association with the perinatal outcome in high-risk pregnancies could provide useful tools for better understanding and management of pathophysiological neural development.

Result showed that in the high risk pregnancies after vibroacoustic stimulation test were significantly associated with favourable perinatal outcome and also reduced the incidence of false positive non-reactive non-stress test.

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FINANCIAL OR OTHER**COMPETING INTERESTS:** None**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

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Date of Submission: 23/05/2015.
Date of Peer Review: 25/05/2015.
Date of Acceptance: 06/06/2015.
Date of Publishing: 12/06/2015.