THE NON STRESS TEST FOR ANTEPARTUM FOETAL MONITORING

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SUMMARY

Two hundred and fifty Nonstress tests were done in 100 high-risk patients. Reactive foetuses had good Apgar score at one and five min. Meconium staining of liquor was less and perinatal mortality was zero.

Introduction

Reliable method for assessing foetal well being is being searched for many years. Nonstress test is now generally accepted as a clinically useful method for detecting utero-placental insufficiency during antepartum period.

Hammacher (1969) noted that lack of FHR acceleration was risk factor but it was unquantified. Later it was found that presence of acceleration with foetal movement during Oxytocin Challenge Test (OCT) was usually associated with a negative OCT and good foetal outcome (Shifrin *et al* 1975 and Lee *et al* 1976) and lack of acceleration occurred in 14-71% of cases with positive OCT and was associated with higher incidence of intra-uterine and neonatal death (Triweiler, 1976 and Farahani and Fenton, 1977).

The study was undertaken with the object of determining the accuracy of NST for the prediction of intra-uterine foetal status and its subsequent outcome.

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Material and Methods

Hundred patients were selected for study. The indications for performance of NST are listed in Table I. The period of gestation ranged from 34 to 43 weeks.

After thorough examination the patient was placed in semi-Fowler's position to avoid supine hypotensive syndrome. Blood pressure was taken every 10 min. The instrument used was Sonicaid Foetal monitor Model FM-2. The Evertson and Paul (1978). A base line record of 20 min. was taken. If during this time two accelerations of greater than 15 BPM lasting for longer than 15 sec associated with FM were obtained the test was interpreted as reactive. If the test was nonreactive, stimulation was applied to the foetus using abdominal wall manipulation for one min. The presence of two accelerations, excluding the stimulation period and subsequent four min., was taken as reactive. If there was

TABLE I
Indications for NST

Indications	No. of patients	Percentage
Postmaturity	30	30
Pre-eclampsa	25	25
IUGR	18	18
BOH	13	13
Previous still birth	4	4
Pregnancy and diabetes	3	3
Pregnancy with jaundice	3	3
Decreased FM	2	2
Foetal tachycardia	2	2
Total	100	—

no acceleration for another 20 min the test was considered non-reactive. The test was considered unsatisfactory when FHR tracings were not adequate for interpretation. Reactive tests were repeated every week and in patients having non-reactive test OCT was done. Unsatisfactory tests were repeated after 24 hours. Fig. 1 shows Reactive NST.

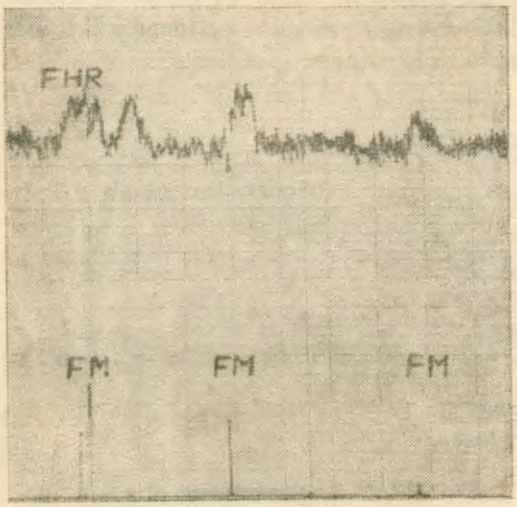

Fig. 1

All patients were followed up at the time of labour and delivery and following measures of outcome were noted.

— Meconium in liquor.
— Apgar score at one and five min.
— Observation on obstetric management including route of delivery and indications for intervention.
— Perinatal mortality.

Observations

Two hundred and fifty NSTs were done on 100 patients. The highest number of tests done on one patient was 8. The results are shown in Table II. Out of 4 patients with non-reactive NST, 3 had positive OCT and one had suspicious OCT.

TABLE II
Results of NST

NST results	No. of patients	Tests
Reactive	96	246
Non-reactive	4	4
Unsatisfactory	2	5*

Relation to Meconium

The relation of NST to meconium staining of liquor is shown in Table III. The incidence of meconium was higher in

TABLE III
Relation of NST to Meconium

NST results	No. of patients	Meconium staining	Percentage
Reactive	96	18	18.7
Non-reactive	4	2	50.0

non-reactive patients as compared to reactive cases.

Relation to Apgar Score

As shown in Table IV the incidence of low Apgar score was more common in non-reactive patients. All 96 patients with reactive NST gave birth to live babies. All of them had good Apgar at 5 min. Only one baby (1.04%) had Apgar score less than 7 at one min. In patients having non-reactive foetuses there were 2 (50%) deaths (one still birth and one neonatal deaths). Three babies (75%) had low Apgar score at one min of which one baby had depressed Apgar score at five min also, which could not be revived. Other 2 had good Apgar score at five min.

Mode of Delivery

This is shown in Table V. Most of the patients with reactive NST had vaginal delivery (76%). 24% patients underwent caesarean section of which only 2 (2.08%) were done for foetal distress. Caesarean section rate was 75% in non-reactive patients. Three patients with non-reactive test were induced. Caesarean section had to be done in all the 3 because of foetal distress. One patient refused for induction and came after 2 days with IUD.

Perinatal Mortality

As shown in Table VI perinatal mortality was nil in reactive patients and it was 50% in non-reactive patients.

TABLE IV
Relation to Apgar Score

Apgar Score	Reactive (96 pts.)		Non-reactive (4 pts.)	
	No.	%	No.	%
A.B. 1-6, 1 min	1	1.04	3	75.00
A.S. 1-6, 5 min	0	0.00	1	25.00

TABLE V
Mode of Delivery

Mode of Delivery	Reactive (96 pts.)		Non-reactive (4 pts)	
	No.	%	No.	%
Vaginal	73	76.0	1	25.0
LSCS (Total)	23	24.0	3	75.0
LSCS for foetal distress	2	2.8	3	75.0

TABLE VI
Perinatal Mortality

NST results	No. of patients	Perinatal mortality	
		No.	%
Reactive	96	0	00.0
Non-reactive	4	2	50.0

Discussion

NST provides a reliable, predictive information about the foetal condition. The result suggests that reactive FHR pattern reflects good foetal outcome. There was no intra-uterine death within a week of reactive NST which indicates adequate placental reserve for one week. In reactive NST only 2 babies (2.08%) developed foetal distress during labour and only I (1.04%) had low Apgar score at one min. On this basis pregnancy can be allowed to continue for another one week as was concluded by Lee and Coworkers (1975).

In patients with non-reactive NST, 3 had positive OCT and 1 was suspicious. One patient with positive OCT had IUD. In other 3 induction was done, all of them developed foetal distress for which caesarean section was done, all of them had low Apgar score at one min of which one (with suspicious OCT) could not be revived. The meconium staining of liquor was more common in non-reactive patients. Perinatal mortality and morbidity was increased and the incidence of caesarean section was also increased. This shows that non-reactive NST is an ominous sign and foetus should not be left in utero.

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