

THE SIGNIFICANCE OF SPONTANEOUS FHR DECELERATIONS DURING NONSTRESS TESTING

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SUMMARY

Thirteen patients showing spontaneous decelerations during non-stress testing were studied. The perinatal outcome in 6 patients showing major decelerations (lasting for more than 60 secs, more than 60 bpm below baseline) was poor—2 IUFD; 1 neonatal death; 2 LSCS for fetal distress. Of the 7 patients who showed minor decelerations (lasting for more than 10 secs, more than 10 bpm below baseline), 6 had a normal delivery, and only 1 needed an LSCS for fetal distress. Suggestions for managing these patients on an individualised basis have been made.

Introduction

The Non Stress Test (NST) is the commonest form of fetal surveillance technique in use today. Spontaneous decelerations are an unusual finding during the NST, and little is known about their significance. Consequently, the management of a fetus which shows spontaneous deceleration during nonstress testing represents a problem for the obstetrician.

We studied the frequency of this finding in our patient population; and reviewed the records of these patients, in order to determine the significance of these decelerations.

Materials and Methods

Four hundred Non Stress Test tracings performed in KEM Hospital over the last 3 years were studied, in order to identify

those which revealed spontaneous decelerations. For inclusion in the study, the decelerations had to be spontaneous, unrelated to uterine contractions. The case records of these patients were then reviewed, in order to determine the perinatal outcome associated with these decelerations, and to suggest guidelines for management.

Two types of decelerations were identified. Major (severe) decelerations were defined as those which lasted for more than 60 seconds, and which were more than 30 beats per minute below the baseline. Minor decelerations were defined as those which lasted for more than 10 seconds, and which were more than 10 bpm below the baseline.

Results

A total of 13 patients showed spontaneous decelerations during NST, giving a frequency of 3.25% in our population of high risk mothers who underwent non-stress testing. Of these, 7 were minor decelerations, and 6 were major.

Of the 7 patients who showed minor

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decelerations, 6 had an uneventful pregnancy course, and delivered normally. Only 1 patient needed an LSCS for fetal distress.

On the other hand, the outcome was much worse for the patients who showed major decelerations. Of the six, 2 patients had an IUFD; one had a neonatal death; two required an LSCS for fetal distress; and only 1 delivered normally.

The results are summarised in Table I.

TABLE I
Patient Details

Case	Indication for NST	GA in wks.	CST	Reason for terminating pregnancy	Delivery	Neonate wt Appar
MINOR DECELERATIONS						
1	primi with decreased fetal movements	36 wks	Neg	Spontaneous labour	Normal	2.4 kg 9
2	G3 P2, Rh Neg, with PIH with IUGR	34 wks	—	PIH	Normal	1.8 kg 9
3	primi, with PIH	38 wks	—	PIH	Normal	2.3 kg 8
4	primi postdated	41 wks	—	Postdated	Emer LSCS, fetal distress	2.8 kg 7
5	primi postdated	40 wks	Neg	Postdated	Normal	3.2 kg 9
6	G2P1, with heart disease with IUGR	36 wks	—	Spontaneous	Normal	1.7 kg 9
MAJOR DECELERATIONS						
7	G2P1 with PIH	39 wks	—	PIH	Emer LSCS, fetal distress	2.7 kg 7
8	primi with PIH with IUGR	36 wks	Pos	IUGR with pos CST	LSCS	1.8 kg 7
9	G3P2 with nephrotic synd with IUGR	34 wks	—	Spontaneous	Normal Baby died on 4th day of pre-maturity	1.6 kg 8
10	Rh immunised G5P4, no living children	30 wks	—	IUFD, labour induced	Normal Macerated SB	1.9 kg
11	Rh immunised G4P3, no living children	32 wks	—	IUFD, labour induced	Normal Macerated SB	1.7 kg
12	primi with PIH with IUGR	36 wks	Neg	PIH	Normal	2.1 kg 8

Discussion

The mechanism of spontaneous decelerations is as yet unclear. Though a number of hypotheses have been proposed, it appears that minor decelerations are most probably related to cord compromise as seen in oligohydramnios, nuchal cord or true knot in the cord. O'Leary identified 37 patients who showed 3 or more persistent spontaneous decelerations during NST (O'Leary, 1980). All these were minor decelerations. Thirtyfive of these 37 patients had intrapartum cord problems, and he concluded that variable decelerations during NST were an indication of cord compromise. Phelan confirmed these conclusions in an independent study (Phelan, 1981).

Bourgeois studied only those patients who showed severe decelerations, his criteria being a deceleration lasting for 1-10 minutes; which was either more than 40 bpm below the baseline, or below 90 bpm (Bourgeois, 1984). Of the 8 patients in his study, 2 had an IUFD; 2 patients had an emergency LSCS without a trial of labour; 2 had intrapartum fetal distress, and needed an LSCS; and only 2 delivered normally. He noted that these decelerations were commonly associated with IUGR, oligohydramnios and abnormal cord position. He concluded that severe decelerations were strongly suggestive of fetal compromise, and recommended consideration of prompt termination of pregnancy to save the baby.

Management of patients showing spontaneous decelerations remains problematic. We would suggest the following approach.

1. Rule out artefacts. It is especially important to ensure that the transducer is positioned correctly, and that the apparent

deceleration is not due to a loss of signal. One must also ensure that there are no uterine contractions which could cause the decelerations. The patient must also be in the left lateral position during testing, to rule out the possibility of decelerations due to the supine hypotension syndrome.

2. For patients with minor decelerations, it is best to continue the NST tracing for a prolonged period of time, to study if the decelerations are repetitive or not. Repetitive decelerations are obviously more worrisome, and require follow-up with a contraction stress test, to rule out fetal compromise. If the associated fetal heart rate variables on the NST—the baseline rate, variability, and periodic acceleration—are reassuring, then an ultrasound, to look for cord problems and oligohydramnios is indicated. Further management would be individualised, depending on the gestational age of the fetus. With preterm fetuses, with immature lungs, temporisation would be acceptable, provided the fetus is carefully monitored. With term fetuses, a trial of labour with intrapartum fetal monitoring is recommended, with the obstetrician maintaining a high index of suspicion for cord problems.

3. Patients showing major decelerations pose a major problem. Major decelerations are best regarded as late signs of fetal compromise. If the fetus has mature lungs, then a trial of labour with intrapartum electronic fetal monitoring is the recommended course, irrespective of the presence of FHR accelerations on the NST. Nothing will be gained by temporising in this situation. If the fetus has immature lungs, then management becomes much more difficult, and needs to be individualised. If FHR

accelerations are present, then it may yet be possible to defer delivery by a few days, to accelerate lung maturity with steroids. If on the other hand, the NST is non-reactive, then prompt delivery is the safest course; even with a preterm baby.

References

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