Admission test as predictor of fetal outcome.

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Summary: **The role of admission test (AT) in predicting fetus at risk was evaluated. One hundred women in labour underwent this test. There was a higher incidence of caesarean delivery for fetal distress (100% vs 56.5%), fetal heart rate decelerations (50% vs 25%) and bradycardia (25% vs 9.4%) in labour, low Apgar scores (25% vs 3.5%), and NICU admissions (100% vs 7%) in patients with ominous AT compared to reactive AT.**

Since AT is a simple test and has high predictive value (74.12%) for normal test, it can be used as an intranatal screening test.

Introduction

Routine electronic fetal heart rate (FHR) monitoring in labour has become an established obstetric practice in the western world. In labour wards with few monitors, selection of patients for continuous monitoring or intermittent auscultation is necessary. Risk assessment based on antepartum factors is often insufficient for patient selection, as intrapartum fetal morbidity and mortality are not uncommon in a low risk population (Ingemarsson et al 1986, Hobel et al 1973). We evaluated the role of Admission test (AT) in intrapartum patients to predict fetuses at risk for adverse outcome. These fetuses would require continuous FHR Monitoring.

Material and Methods

One hundred patients in labour with cephalic presentation and intact membranes underwent admission test. Fetal heart rate was recorded for 20 minutes and classified as reactive, suspicious or equivocal and ominous.

Reactive admission test: Presence of two accelerations of 15 beats per minute above baseline, lasting for 15 seconds, with normal baseline FHR and variability in the absence of decelerations.

Suspicious or equivocal AT: When there is no fetal heart rate acceleration in addition to an abnormal feature such as reduced baseline variability (less than 5 beats per minute), presence of deceleration, baseline tachycardia or bradycardia.

Ominous AT - When more than one abnormal feature or repeated variable decelerations or late decelerations are present.

Women with malpresentations, multiple gestation, congenital anomalies were excluded.

Pregnancy outcome was assessed with respect to incidence of intrapartum fetal heart rate abnormalities, operative delivery, Apgar score less than 7 at 1 & 5 minutes and neonatal intensive care unit (NICU) admissions.

Results

Of 100 patients who underwent admission test, 68% were in low risk and 32% were in high risk group. The high risk factors were chronic hypertension, gestational diabetes, intrauterine growth retardation, oligohydramnios, postdated pregnancy, pregnancy induced hypertension, Rhesus isoimmunization, rheumatic heart disease.

Eighty five percent women had reactive AT, 11% and 4% of the admission tests were suspicious or equivocal and ominous respectively. The correlation between AT and fetal outcome and operative delivey is shown in Table.1. There was higher incidence of caesarean section (100% vs 56.5%), FHR decelerations (50% vs 20%), bradycardia, low Apgar score at 1 minute (25% vs 3.5%) and NICU admissins (100% vs 7%) in patients with ominous AT compared to reactive AT. No newborn had Apgar score <7 at 5 minutes. The sensitivity of the

Table - 1

Relation between Admission test and fetal outcome

	Reactive n=85	Equivocal n=11	Ominous n=4
LSCS for fetal distress	13(56.5%)	3(27.27%)	2(100%)
MSL	6(7%)	1(9%)	-
FHR decelerations	9(20%)	2(18.18%)	2(50%)
Bradycardia	8(9.4%)	1(9.1%)	1(25%)
A/s < 7 at 1 minute	3(3.5%)	-	1(25%)
NICU admission	6(7%)	2(18.18%)	4(100%)

MSL = Meconium stained liquor

admission test in predicting fetal distress was 21.43%, specificity was 87.5%, the positive and negative Predictive values were 40% and 74.12% respectively.

There was no statistically significant differnce in the incidence of fetal distress in the patients in high risk and low risk groups undergoing admission test.

Discussion

In 1968 the first clinical electronic fetal monitor became available and Paul et al (1975) reported that such monitoring reduced both caesarean sections for fetal distress and perinatal asphyxia. Electronic fetal monitoring has been a subject of controversy for the last two decades. Several authors critisize the policy of electronic fetal monitoring (Leveno et al 1986, Shy et al 1990), claiming that it led to increase in caesarean sections with no evidence of fetal benefits. Vintzileo et al (1995) compared continuous electronic FHR monitoring versus intermittent auscultation and found electronic monitoring superior with better sensitivity, lower sepcificity and higher positive and negative predictive values ($P < 0.001$).

Controversies apart, electronic FHR monitoring can be used as an admission test to detect fetal intrauterine asphyxia already present at admission. This would help in identifying population of women who would require continuous electronic monitoring or intermittent auscultation. Antepartum risk factors are not accurate as predictors of fetal outcome as fetal heart changes (Westgren et al 1980) and fetal acidosis (Edington et al 1975) might occur with same frequency in high as well as low risk group. In our study there was no statistical difference in incidence of fetal distress in high risk and low risk groups. Lower incidence of caesarean section for fetal distress (56.5% vs 100%), FHR abnormalities (20.1 vs 50.1 bradycardia 19.4% vs 25%) and NNICU admissions (7% vs 100%) were noted in paients with reactive AT compared to ominous AT.

Statistical analysis shows a high predictive value of a normal test (74.12%) and high specificity (87.5%) but rather low predictive value of abnormal test (40%) and low sensitivity (21.43%). These values are comparable with Ingemarsson et al (1986) study, high predictive value for a normal test (98.7%), high specificity (99.4%), rather low predictive value for abnormal tests (40%) and a low sensitivity (23.5%).

A short recording immediately after admission can detect fetal distress if present and predict fetal well being for next few hours. Since it is a simple test, has high predictive value for normal test, it can be used as an intrapartum screening test.

References

1. Edingon PT, Sibanda J, Beard RW:. Brit Med J. 3: 341; 1975.
2. Hobel CJ, Hyvarinen MA, Okada DM, Willian OH. Am J Obstet Gynec. 117: 1-1973.
3. Ingemarsson I, Arulkumaran S, Ingemarsson E, Tambyraja RL, Ratnam SS. Obstet Gynec. 68: 800; 1986.
4. Leveno KJ, Cunningham FG, Nelson S, Roark M, Williams ML, Guzick D, Dowling S, Rosenfeld CR, Buckley A. N. Engl. J. Med. 315: 615; 1986.
5. Paul R. Suidam AK, Yeh SY, Schifrin BS, Hon EH. Am J Obstet Gynec. 123:206-1975.
6. Shy KK, Luthy DA, Bennet FC, Whitfield M, Larson EB, Van Belle G, Hughes JP, Wilson JA, Stenchener MA. : N. Engl J Med. 322:588; 1990.
7. Vintzileo AM, Nochinson DJ, Antskalis A, Varvarigos I, Guzman ER, Knuppel RA. Am J Obstet Gynec. 173 (4):1021-1995.
8. Westgren M, Ingemarsson E, Ingemarsson I, Solum T. Obstet Gyne. 56:301-1980.