ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

TO EVALUATE RELATIONSHIP BETWEEN ADMISSION CARDIOTOCOGRAPHY AND FETAL OUTCOME IN HIGH-RISK PREGNANCIES

KEY WORDS:
Cardiotocography, admission ctg, labour, auscultation

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ABSTRACT

Cardiotocography (CTG) is a graphical (graph) recording of fetal cardiac activity (cardio) and uterine contraction (toco) both recorded in the same time scale simultaneously through uterine quiescence and contraction. The fetal heart rate is recorded using a transducer placed on the maternal abdomen (external monitoring) or using an electrode placed on the fetal scalp (internal monitoring) and is printed on a paper in a similar way to ECG. This is cardiac part of the CTG. The external transducer uses the doppler principle similar to ultrasound. There is a second transducer, the toco component which is also placed on the maternal abdomen over the fundus of uterus and records the contractions. Before starting CTG recording, it is mandatory to check the maternal pulse to avoid erroneous recording of maternal heart rate as fetal. Admission CTG is a better tool of fetal surveillance and provides continuous electronic fetal heart rate monitoring. On the other hand, auscultation is intermittent, subjective and difficult to verify and document.

INTRODUCTION

- Continuous electronic monitoring of foetal heart rate in labour has become an established practice in developed countries. Economic curtailment in many developing countries limit the routine and continuous foetal heart rate monitoring. In such a scenario, an alternative to labelling patients for electronic fetal monitoring or at least stringent auscultation might be a short recording of FHR on admission for labor; the admission test.

- Based on the assumption that early uterine contractions may serve as a functional stress to the fetus, an admission test might detect fetal intrauterine asphyxia already present on admission and might have some predictive value for asphyxia that may develop during labor.

- Admission CTG is recording of foetal heart rate for 20 minutes after the admission of antenatal woman in the labour room. Admission test is interpreted as reactive, suspicious and pathological

The indications for the electronic foetal heart rate monitoring are

- Risk arising from the maternal medical problems: Chronic HTN, Diabetes Mellitus, Renal diseases, Collagen Vascular diseases, Severe anaemia and hemoglobinopathies, Cyanotic heart disease, Asthma, epilepsy, Substance abuse

- Obstetrical indications: Decreased fetal movement, Preeclampsia, Rh isoimmunisation, IUGR, Oligohydramnios, Previous stillbirth PPROM, Post term pregnancy, Cholestasis of pregnancy

AIMS AND OBJECTIVES: To evaluate the relationship between Admission Cardiotocography and fetal outcome among high-risk obstetric patients.

MATERIALS AND METHODS:

STUDY DESIGN - It is a hospital based prospective observational study conducted in the department of obstetrics and gynaecology at a Tertiary care hospital-government general hospital, Kakinada from the time period June 2021to June 2022. Total of 200 Antenatal women with 37 weeks completed period of gestation with any high risks admitted to the hospital were taken into the study on a random basis.

METHODOLOGY: A Verbal informed consent is taken from the study women, and they were subjected to an admission CTG which included a 20-minute recording of Fetal heart rate and uterine contractions. The result of admission test was categorized into normal reassuring, Equivocal/suspicious and abnormal/ominous as per RCOG guidelines for the interpretation of CTG tracings. Fetal outcomes were noted in terms of Apgar score at 2 and 5minutes, admission to NICU and incidence of intrapartum still births/neonatal mortality rate.

INCLUSION CRITERIA: Bad obstetric history, Previous history of still births, Pregnancies with concurrent medical illness like Hypertension, Diabetes, mellitus, Renal disease, Gestational hypertension/preeclampsia, PROM, IUGR, oligo/polyhydramnios, Rh -ve pregnancies, Postdated pregnancy, diminished fetal movements

EXCLUSION CRITERIA: U/S confirmed lethal anomaly of fetus, Acute hypoxic states like abruption of placenta, Cord prolapses, uterine scar rupture, Multiple pregnancies, abnormal lie and presentations, Women admitted for Elective caesarean section.

OBSERVATION AND RESULTS

Table 1: showing distribution of women in different age groups

AGE	NO.	PERCENTAGE
15-20	74	37%
21-25	80	40%
26-30	36	18%
>30	10	5%

- Among the 200 cases, 86 were primigravida, 114 were multigravida. The maximum number of cases were of multigravida
- The study group out of 200 cases 80 women were not in labour accounting for 40% and 120 were in labor accounting for 60%

Table 2: Showing distribution of risk factors in the study group

RISK FACTORS	No.	%
Past dates	30	15%
Preeclampsia/gest HTN	52	26%
PROM	22	11%
Diabetes mellitus	31	15.5%
Oligo/polyhydramnios	32	16%

Diminished fetal movements	6	3%
Rh -ve pregnancy	8	4%
IUGR	12	6%
Others	7	3.5%

Table 3: Showing the result of admission test

ADMISSION TEST	NO.	%
REACTIVE	164	82%
SUSPICIOUS	24	12%
ABNORMAL	12	6%

Table 4: Showing the mode of delivery in all the types of admission tests

	NVD	OUTLET	LSCS
REACTIVE (164)	101(61.6%)	12(7.4%)	51 (31.1%)
SUSPICIOUS (24)	13(54.3%)	1(4.1%)	10(41.7%)
ABNORMAL (12)	2(16.7%)	1(8.3%)	9(75%)

Table 5: Showing the incidence of meconium stained liquor

AT	NO.	%
REACTIVE (164)	18	10.9%
SUSPICIOUS (24)	9	37.5%
ABNORMAL (12)	8	66.7%

Table 6: Showing distribution of cases according to apgar scores in various admission tests

AT	>7	<7
REACTIVE (164)	139(84.8%)	25(15.2%)
SUSPICIOUS (24)	17(70.8%)	7(29.2%)
ABNORMAL (12)	4(33.3%)	8(66.7%)

Table 7: Showing the incidence of NICU admissions in various admission tests

AT	STILL BIRTHS	NICU DEATHS
REACTIVE (164)	2(1.2%)	4(2.4%)
SUSPICIOUS (24)	2(8.3%)	1(4.17%)
ABNORMAL (12)	2(16.67%)	2(16.67%)

There was a statistically significant (p=0.034) association for the incidence of NICU deaths more in the non-reactive admission test group.

SUMMARY AND CONCLUSIONS

- The admission Cardiotocography is a simple, cost effective and non-invasive test in admission room that can serve as a screening tool in triaging foetuses of high-risk obstetric patients. There is significant relationship between AT results and foetal distress.

- Admission test in intrapartum surveillance detects foetal distress if already present at admission and predicts foetal wellbeing for next few hours (=5-6 hours) unless intervened by an acute event (viz. cord prolapse, abruptio placenta etc).

- Higher incidence of LSCS was noted for foetal distress and NICU admissions in cases with suspicious and pathological admission tests as compared to cases with reactive admission test.

- There was also a higher incidence of meconium stained liquor, still births and NICU deaths in the pathological admission test as compared to cases with reactive and suspicious admission tests.

- Antenatal high-risk factors like PIH, IUGR, Diabetes Mellitus, Heart Disease, Oligohydramnios etc. definitely play important role in fetal distress, as the fetus is already compromised in these cases.

REFERENCES

1. Parer J T. Fetal heart rate. In : Creasy R K, Resnik R eds. Maternal – fetal medicine principles and practice, PhiladelphiaW B Saunders, 285, 1984.
2. Wolfson R N, Sorokin Y.Autonomic control of fetal cardiac activity:ElkayamU,
3. Gleicher N, eds. Cardiac problems in pregnancy. Diagnosis and management of maternal and fetal disease. NewYork: Alan R Liss, 365, 1982.
4. Hutson J M, Mullelr-Henbach E Diagnosis and management of intrapartum reflex fetal heart changes. Clin Perinatal 1982;9:395.
5. Pillai M, jamesD.The development of FHR pattern during normal pregnancy.
6. Am J ObstetGynecol, 76:812, 1990.
7. Williams Obsterics: 20th edition Chapter 14th, 347-378