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## Role of labour admission test (CTG) in high risk pregnancies: An observational study at a tertiary hospital

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### Abstract

Labour admission test as the name implies refers to conduction of CTG at the time of admission to labour room. It is short 20 minute study of fetal heart rate monitoring with uterine contraction. Labour admission test helps to triage high risk patients so that time is not wasted in a busy labour room. This test is especially useful. In high risk pregnancies with risk factors like preclampsia, Diabetes, anemia, rhesus alloimmunisation etc. Those with normal CTG are subjected for repeat test after 4 hours if they remain undelivered. While as those with non-reactive CTG are subjected for termination of pregnancy.

**Keywords:** CTG, labour admission test, high risk pregnancy

### Introduction

CTG is an electronic fetal heart monitoring to assess intrauterine fetal being and rule out intrauterine hypoxia and acidosis. GTG is done antenatally in case patient complains of decreased fetal movements, which can be further supplemented by BPP and Doppler. Labour admission test CTG comprises of CTG done at the time of admission of patient to labour ward to look for already prevailing high risk factors and also new factors that have emerged [1-4]. Some Fetuses are already in stress at the time of admission to labour ward [4]. Thus admission CTG detects the ability of foetus to withstand the stress of labour [5]. This is also known as Labour Admission test first described by Ingemarsson *et al.* [6], particularly useful in a busy labour ward where high risk patients are detected at the time of admission, It is a short electronic Fetal monitoring for 20minutes,, in which record of fetal heart and uterine activities monitored. Results are interpreted as reactive, equivocal, and non-reactive. If CTG is reactive then repeat test is done after 3-4 hours if patient remains undelivered. In case of ominous results decision for intensive fetal monitoring or termination of pregnancy is taken.

Admission CTG thus helps to triage patient's in a busy labour room. It has been seen that chances of adverse pregnancy outcome like thick meconium, low APGAR score, NICU admission is more in group with non-reactive CTG.

### Methodology

This study was carried in a tertiary hospital of SKIMS Soura from year August 2018-May 2019. 100 patients were allocated in this study. After obtaining approval from Ethical committee, Written and informed consent was taken from patients.

### Inclusion criteria

All women >36 weeks of gestation with high risk factors; Anemia, PIH, Preterm labour, preterm premature rupture of membranes, intrauterine growth retardation, RH isoimmunisation, Postdatism, oligohydraminos and decreased fetal movements.

### Exclusion criteria

All patients <36 weeks with no risk factors.

After admission to labour room Labour Admission Test (CTG) was done, it was 20 minute trace of fetal heart pattern and uterine activity. In this CTG baseline variability, accelerations, decelerations were noted; CTG was interpreted as reactive, Equivocal, Non-reactive according to RCOG guidelines as below:

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Feature	Baseline	Variability	Deceleration	Acceleration
1. Reactive/ Reassuring	100-160	>5	None/early	Present
2. Suspicious/ Equivocal/Non reassuring	161-180	<5 for 30-90 min	Variable deceleration: Dropping from baseline line <60 bpm, recovering >60sec OR >60 bpm recovering >60sec or late deceleration. Present up to 30 minutes occurring >50% contraction	Absence of acceleration with an otherwise normal CTG is of uncertain significance
3. Abnormal/Non-reactive	>180 or <100	<5 for >9 minutes	Non reassuring variable deceleration present even 30 minutes after conservative method or N. late deceleration >30 min With >50% of contractions or Bradycardia or a single prolonged deceleration>3 min.	

### Categorization of CTG traces

1. Normal: all features are reassuring.
2. Suspicious: one non-reassuring and rest are reassuring.
3. Pathological: Two or more features non-reassuring or one or more abnormal categories.

On admission to labour room, all the women included in the study were subjected for detailed history and examination. Demographic profile of patient was taken as regarding age, parity, menstrual history, last menstrual history, obstetric history, medical history, family history.

Details of 1st trimester USG were seen. Physical examination was done regarding pallor, jaundice, cyanosis, oedema, per abdominal examination was done to assess gestational age by fundal height, per vaginal examination was done and cervical findings were analysed as per stage of labour. There after admission CTG was done as described above and findings. We're interpreted as reassuring, non-reassuring and abnormal. Those with reactive CTG were subjected for intermittent auscultation while those with non-reassuring CTG were subjected for repeat CTG for >40minutes and decision was taken as CTG reactive and CTG non-reactive/abnormal.

### Nulliparas (52%) were more in our study group which is mere incidental finding

**Table 3:** Reactive CTG was seen in 74% of patients and non-reactive CTG was seen in 26% of patients.

Pattern of CTG in patients	No. of PTS	Percentage
Reactive CTG	74	74%
Non-reactive CTG	26	26%

**Table 4:** Mode of delivery according to reactivity of CTG

Type of CTG	Vaginal delivery	Instrument delivery	LSCS	P value
Reactive	43 (58%)	24 (34%)	7 (9%)	<0.001
Non-reactive	4 (15.3%)	7 (26.9%)	15 (57.6%)	

Thus in reactive CTG group 58% of patients delivered vaginally while in non-reactive CTG group 57.6% of patients delivered by lscs. P value <0.001 statistically significant.

### Perinatal outcome

a) APGAR Score at 5 minutes

**Table 5:** APGAR Score at 5 minutes

APGAR score value	Reactive CTG	% age	Non-reactive CTG	% age	P
<4	0	0%	2	7.7%	<0.001
5-7	24	33%	16	61.54%	
>7	50	67%	8	30.76%	

Thus in reactive CTG group 67% of patients had APGAR score>7. While in non-reactive CTG group 61.54% had APGAR score between 5-7. P value <0.001 statistically significant.

Those with non-reactive CTG were subjected for continuous electronic fetal heart monitoring and those with abnormal finding were subjected for termination of pregnancy either vaginal or Cesarean. Perinatal outcome in form of meconium stained liquor, APGAR score, NICU admission was noted in abnormal CTG group.

### Results

**Table 1:** Thus most common age group in our study was 20-30 yr (62%).

Age group of patients	No. of patients	Percentage
20-30 yr	62	62%
30-40 yr	38	38%

**Table 2:** Total number of patients in our study = 100

Parity of patients	No. of patients	Percentage
Nulliparas	52	52%
Multiparas	30	30%
Grandmulti	18	18%

**b) Meconium staining of liquor**

CTG meconium stained liquor clear liquor p value.

**Table 6:** Meconium staining of liquor

CTG	Meconium stained liquor	Clear liquor	P value
Reactive	15 (20.27%)	59 (79.73%)	<0.001
Non-reactive	20 (76.9%)	6 (23.07%)	

Thus in non-reactive CTG group 76.9% of patients had meconium stained liquor. P value <0.001.

**c) NICU admission****Table 7:** NICU admission

CTG	No Admission	Yes Admission
Reactive	62 (83.7%)	12 (16.3%)
Non-reactive	7 (26.93%)	19 (73.07%)

Thus NICU admission was seen in 73.07% of patients with Non-reactive CTG. P value <0.001 statistically significant.

**Discussion**

In our study the major age group was 20 - 30 years (62%) followed by 30 - 40 years (38%). This is similar to study done by Kansal *et al.* in which 44% of patients belonged to age group of 26 - 30 year [4, 5, 8, 9-11].

In our study majority of patients were nulliparas (52%), multiparas (30%), grandmulti (10%) similar to study by Kumari VR *et al.* where 56% we're nulliparas and 44% we're multiparas [12].

In our study total of 100 patients were taken >36 weeks and with high risk factors pregnancy induced hypertension, oilgohydraminos, IUGR, decreased fetal movements, postdatism, previous scar. Out of 100 patients 74 patients had reactive CTG and 26 patients had non-reactive CTG. In study by Rahaman *et al.* [13] CTG can be used as screening tool to triage High risk pregnancies especially in labour room with heavy work Load. In study by Verma *et al.* CTG is used for detection and timely intervention of high risk factors. In our study regarding mode of delivery, in CTG reactive group vaginal delivery was seen in 43 patients (58%), instrumental delivery in 24 i, e 34% patients and LSCS was seen in 7 patients (9%) of patients while in non-reactive group LSCS was seen in 57.6% of patients, instrumental delivery in 26.9% of patients and normal vaginal delivery in 15.3% of patients. Thus LSCS was more in non-reactive CTG group (P value <0.001) statistically significant. So our results coincide with study of Sood and Verma in which lscs was more in non-reactive CTG group [14, 15].

In our study 5 minute APGAR score was < 7 in 61.54% of patients with non-reactive CTG. It is similar to study conducted by Sood AK [15] where APGAR score <7 was seen in patients with non-reactive CTG group (P value <0.005).

In our study meconium stained liquor was seen in 76.9% of patients with non-reactive CTG group, similarly NICU admission was seen in 73.07% of patients with non-reactive CTG group (P value <0.001) similar to study by Rahaman *et al.* [13].

**Conclusion**

Labour admission test is a non-invasive screening test for high risk patients at the time of admission to labour room to detect already compromised babies that need timely intervention.

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