Role of intrapartum Surveillance on Perinatal outcome in High Risk Pregnancy

R. Gowri • T. P. Kohli • S. Kumari • M. Sood
Dept. of Obs. and Gyn, Lady Hardinge Medical College and Associated Hospitals, New Delhi.

Summary : **This prospective study was undertaken on 150 pregnant patients(100 high risk and 50 low risk pregnancies) over a one year period. Half of each group, high risk and low risk group were monitored by an external tocodynamometer during labor and the other half by intermittent auscultation. EFM detected 22.6% abnormal fetal heart rate pattern as against 16% by intermittent auscultation. Operative mode of delivery were significantly higher in high risk group. There was no significant difference in the two groups in the narrow outcome measures.**

Intermittent auscultation is as effective as electronic fetal monitoring for intrapartum surveillance. However it is suggested that electronic fetal monitoring should be put to day to day use especially in high risk pregnancies in busy hospitals like ours, where it is very difficult to clinically monitor each patient closely.

Introduction

Perinatal morbidity and mortality is alarmingly high in Indian context. Although the number of perinatal deaths due to hypoxia contribute very little to the perinatal mortality, when it happens, it is an emotional tragedy because it is avoidable in contrast to other causes. The tragedy becomes greater, when a near perinatal death is converted to perinatal morbidity, with consequences of cerebral palsy or mental retardation. Analysis of reported obstetrical claims show that the great majority concern labor and that avoidable factors are frequently present.

This study was thus undertaken to analyse the effect of high technology versus clinical monitoring as means of intrapartum surveillance and to study the perinatal outcome in high risk versus low risk pregnancies.

Materials and Methods.

This prospective controlled study was undertaken on 150 pregnant patients (100 high risk and 50 low risk), in labour. Half were monitored by external cardiotocography and the other half by periodic auscultation.

Single pregnancies with cephalic presentation and gestational age 34 weeks or more were selected. Cases of premature rupture of membranes, antepartum haemorrhage, malpresentations and diagnosed congenital malformations were excluded from the study.

High risk factors chosen were - age <20 & >35 yrs, Haemoglobin <8g%, pregnancy induced hypertension, pregnancy with diabetes, Rh negative pregnancy, previous preterm or still birth, and previous caesarean section. Presence of two or more factors were included as high risk pregnancy.

Partogram were plotted in all cases. Intrapartum events viz, colour of liquor, fetal heart rate pattern, mode of delivery, Apgar score, resuscitative measures taken and admission to neonatal nursery were recorded. Perinatal morbidity and mortality were noted. Comparisons were made in between the clinical & CTG and High risk & low risk groups.

Results

Prolonged labor could be prevented with the guidelines of partography. Labor lasted for more than 24 hrs. in 1.3% cases only. Partography revealed that the cervicogram crossed the alert line in 5.3% patients. 75% of these had operative delivery (50% had caesarean section and 25% had instrumental vaginal delivery.) The cervicogram crossed the action line in one patient, this patient was later delivered by caesarean section.

The overall caesarean section rate was 19.3%. In our study there was no significant difference in the caesarean section rate in the control group vs the CTG group (Table I). The caesarean section rate was significantly higher in the high risk v/s low risk group. ($X^2 = 1.937$ $p<0.01$).

Table 1.
Frequency distribution of the mode of delivery

Group	Vaginal	Forceps	Vacuum	Caesarean Section
High risk (100)	69	2	1	28
Low risk (50)	45	3	1	1
Clinical (75)	59	1	1	14
C.T.G. (75)	55	4	1	15

As depicted in Table II, the incidence of meconium staining of liquor during labor was 10.7% in the control group vs 8% in the CTG group. None of the babies born in the CTG group were depressed at birth as against 6.7% each in the clinical and unbooked group. This was however not statistically significant. CTG detected 22.67% abnormal fetal heart rate pattern, whereas periodic auscultation detected 16% abnormal fetal heart rate pattern. Admission to nursery was significantly high in the high risk group ($X2 = 5.75$ $p<0.025$). 2.67% newborns in all had birth asphyxia (4% of the clinical vs 1.3% of the CTG group). None of the babies of the CTG group had seizures in the neonatal period. The perinatal morbidity was considerably lower in the low risk group compared to high risk group (Table III).

It was observed that in the CTG group, none of the subjects with a normal pattern had meconium staining of liquor of neonatal depression at birth.

Perinatal mortality : There were no intrapartum deaths. The perinatal mortality rate was 26 per 1000 due to 4 neonatal deaths. One baby had incompatible congenital heart disease (unbooked patient). Second baby had respiratory distress. It was a preterm section for precious

Table II. Frequency distribution for perinatal outcome in the various groups

Group	Thick meconium	Abnormal FHR	1 min. A.S.<6	5 min. A.S.<6	Admission to nursery	Resuscitation measure	Mortality
Clinical (75)	8	12	5	1	9	9	3
C.T.G. (75)	6	17	0	0	9	7	1
High risk Clinical (50)	7	7	5	1	9	7	3
High risk C.T.G. (50)	4	13	0	0	8	4	1
Low risk Clinical (25)	1	5	0	0	0	2	0
Low risk C.T.G. (25)	2	4	0	0	1	3	0

Table III
Morbidity pattern in the study cohort.

Group	a	b	c	d	e	f	h	i	j	k	l	m	n
HR 100	1	1	-	10	1	4	3	1	18	9	1	2	1
LR 50	-	-	-	1	-	-	1	0	4	1	-	-	-
CL 75	-	-	-	6	1	4	3	1	11	3	-	2	1
CTG 75	1	1	-	5	-	-	1	1	11	8	1	-	-
T 150	1	2	0	11	1	7	4	2	1	22	1	2	1

a=hypoglycemia, b=sepsis, c=disseminated intravascular coagulation, d=hyperbilirubinemia, e=hypocalcemia, f=respiratory distress syndrome, h=birth asphyxia, i=cephalhematoma, j=pneumonia, k=prematurity, l=meconium aspiration syndrome, m=seizures, n=intracranial hemorrhage, HR-high risk, LR - low risk, CL - clinically monitored and CTG- electronically monitored.

pregnancy with BPS of 4/10 (NST NR but no decelerations). Third baby belonged to Clinical group. It had passed meconium and had bradcardia. The patient delivered before taking up for L.S.C.S. It died on the third day. Fourth baby belonged to CTG group. Late decelerations were observed during labour, but relatives refused caesarean section. PIH and H/O previous pregnancy loss were seen in 3 of the above 4 cases.

Discussion

Consistent with the studies of Cardozo et al (1982) and Studd (1973). our study also found high incidence of operative and instrumental vaginal delivery in patients with prolonged latent phase and in those where cervicogram crossed the alert line.

Operative mode of delivery increases in high risk pregnancies. (36% in high vs 2% in low risk patients in our study) The I.C.M.R. task force study (1990), also observed that the rate of caesarean section increases with increasing age (<35 years), previous operative delivery, and bad obstetric history. Zuspan et al (1979) observed that intrapartum hypoxic events may occur in any pregnancy but are more common in high risk pregnancies 11% of the high risk group as against 6% of the low risk group in our study had thick meconium staining of liquor. 6% neonates born in the high risk group as against none in the low risk group had low one minute Apgar score at birth.

Around ten controlled studies have tried to clinically evaluate the effect of intrapartum monitoring on obstetric management and on short term fetal outcome. Haverkamp et al (1976), Kelso et al (1987), studied high risk pregnancies, and could not find any beneficial impact of EFM on fetal outcome but found an increased risk of caesarean section in the electronically monitored mothers. Renou et al (1976) found improved neurological and biochemical status of the newborns in the monitored group. Shenker et al (1976), Renou et al (1976), Hughey et al (1977) and Boehm et al (1981) didn't find any increase in caesarean rate due to electronic monitoring.

Neldam et al (1986) and Vintzileos et al (1993) also didn't find any beneficial effect of EFM on perinatal outcome. The latter however found significantly low perinatal deaths due to fetal hypoxia in the EFM group.

In the present study there was no significant difference in the caesarean section rate or perinatal outcome in the two groups.

To conclude intermittent auscultation is as effetive as electronic fetal monitoring in detecting fetal distress and predicting abnormal perinatal outcome, especially in a set up with low patient load.

However in a busy set up like ours, with over 14000 deliveries a year, where it is impossible to closely monitor each labouring patient, it is suggested that EFM should be put into day to day use, specially on selected "at risk" group of patients.

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