INTRAPARTUM ELECTRONIC FETAL HEART RATE MONITORING

(A Study of 200 Cases)

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SUMMARY

Intrapartum fetal heart rate monitoring is mandatory in Oxytocin stimulated labours. It is a well established modality in the west since 1960.

A study of 200 cases monitored by external Cardiotocography is being presented. Normal fetal heart rate patterns was seen in 91.4% cases. The C.S. rate for fetal distress was 4%.

Introduction

Fetal heart rate monitoring or cardiotocography has been established as an objective method of assessing fetal well being in labour and also as a means of predicting the fetal outcome. It is a well established modality in the western countries since 1960.

Labour is a stress to both mother and the foetus and fetal heart cannot be clinically well appriciated during the contractions, also it is not possible to comment on the variability and periodic changes clinically. Hence electronic fetal heart rate monitoring is mandatory during labour, especially in accelerated and induced labours. With fetal heart rate monitoring it is possible to detect signs of fetal distress early and institute proper management.

Material and Methods

196 patients randomly selected were subjected to electronic, external F.H.R. monitoring by SONICAID FM II.

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In each case the following changes were noted (Hon's Criteria):

(i) Base line (Normal, Tachycardia, Bradycardia)

(ii) F.H.R. Variability (absent, decreased, normal, increased)

(iii) Periodic changes (accelerations, deccelerations: early variable and late).

For practical management the F.H.R. patterns were interpreted according to Tournaire *et al* (1976).

Observations and Results

Case Distribution

The cases were divided into 3 groups:

Group I: Normal labour 100

Group II: Accelerated Labour 60 (mild CPD, leaking pv, minimal pains)

Group III: Elective induction 40 (PET, Eclampsia, Postdate)

Total .. (200)

Out the 200 cases 4 cases 2 each of group II & III reported with I.U.D. hence electronic F.H.R. monitoring was done in 196 cases.

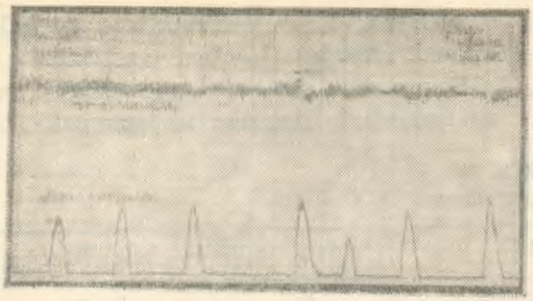

Fig. 1

Fig. 2

Fig. 3

Base Line FHR: 118 cases (59%) showed normal tracing, 20 cases (10%) showed Tachycardia and in 15 cases (7.5%) Bradycardia was seen (Table I).

TABLE I
Base Line F.H.R.

	Normal	Tachy-cardia	Brady-cardia
Group I	81	13	2
Group II	25	2	8
Group III	12	5	5
Total	118 (59%)	20 (10%)	15 (7.5%)

F.H.R. Variability: Absent variability was observed in only 1 case (0.5%) decreased to 10 cases (5%), normal in 166 cases (83%) and saltatory in 2 cases (1%) as shown in Table II.

Periodic Changes: 29 cases showed early decelerations, in 6 (3%) early prolonged decelerations were seen, Mild variable decelerations were seen in 9 cases (4.5%) and severe variable decelerations was observed in 2 cases (1%), while 7 cases (3.5%) showed late decelerations (Table III).

TABLE II
F.H.R. Variability

	Absent	Decreased	Normal	Increased	Saltatory
Group I	0	1	93	6	0
Group II	0	5	45	7	1
Group III	1	4	28	4	1
Total	1	10	166	17	2

TABLE III
Periodic Changes

	E.D.	M.V.D.	E.P.D.	S.V.D.	L.D.
Group I	12	—	—	—	2
Group II	12	4	3	1	3
Group III	5	5	3	1	2
Total	29 (14.5%)	9 (4.5%)	6 (3%)	2 (3.5%)	7 (3.5%)

According to Tournaire *et al* (1978) the patterns in the present study were classified into normal or acceptable, warning, danger and extreme as shown in Table IV.

TABLE IV
F.H.R. Patterns

Pattern	Cases	I	II	III
Normal	(176)	97	51	28
Warning	(12)	2	4	6
Danger	(7)	1	3	3
Extrenal	(1)	—	—	1

F.H.R. Pattern and Mode of Delivery: The mode of delivery and intervention was decided on the basis of Tournaire's classification.

Out of the total 196 cases monitored, 176 showed normal pattern and out of these 161 (91.4%) delivered normally, in 8 (4.5%) outlet forceps was applied while in 7 cases (3.9%) C.S. was done for cervical dystocia and non-progress of labour.

12 cases showed warning pattern and these were managed conservatively by changing maternal posture, oxygen inhalations and plain dextrose drip. It was observed that 3 cases recovered to normal F.H.R. pattern and delivered vaginally, in 8 cases (66.6%) the warning pattern persisted and as the cervix was fully dilated labour was terminated by outlet forceps. In 1 case (8.3%) the F.H.R. pattern persisted despite of all conservative measures and as the cervix was not fully dilated, caesarean section was done.

Seven cases showed danger pattern and an immediate decision to terminate the labour was taken. In one case the delivery was accomplished by outlet forceps while in 6 (85.2%) C.S. was done.

One case showed extreme tracing and this baby was immediately delivered by C.S. Table V shows the Mode of delivery.

Fetal Heart Rate pattern and Apgar Score

Out of the 176 with normal F.H.R. pattern 113 (64.2%) showed an Apgar of 9, in 62 (35.2%) an Apgar of 6-8 was observed while only one case (0.6%) showed Apgar of 5 at 1 min (Table VI).

Out of 12 cases of warning pattern in 4 cases (33.3%) an Apgar of 5 was seen, while 8 cases (66.7%) showed an Apgar of 6-8.

Out of the 7 cases with danger pattern in 5 (71.4%) an Apgar of 5 was observed and 2 (28.6%) showed a score of 6-8 at 1 min.

TABLE V
F.H.R. Pattern and Mode of Delivery

Pattern	Normal vaginal	Outlet Forceps	Caesarean section
Normal or acceptable	161 (91.4%)	8 (4.5%)	7 (3.6%)
Warning	3 (25%)	8 (66.6%)	1 (8.3%)
Danger	0	1 (14.8%)	6 (85.2%)
Extreme	0	0	1 (100%)

TABLE VI
Apgar Score at 1 Minute

Pattern	APGAR		
	<5	6-8	8
Normal (176)	1 (0.6%)	62 (35.2%)	113 (64.2%)
Warning (12)	4 (33.3%)	8 (66.7%)	0
Danger (7)	5 (71.54%)	2 (28.6%)	0
Extreme (1)	1 (100%)	0	0

One case with extreme pattern showed an Apgar score of less than 5 at 1 min.

Discussion

A total of 15 (7.5%) C.S. were done in the present study out of which 7 were for dystocias and 8 (4%) for fetal distress. The caesarean section rates were comparable with other workers. Dastur *et al* monitored only high risk cases and have reported a C.S. incidence of 20% for fetal distress. (Table VII).

With worsening the F.H.R. pattern, poor apgar scores were seen. Less than 5 Apgar was seen in 100% cases with extreme pattern, in 71.4% with danger pattern, in 33.3% with warning pattern and in only 0.6% with normal pattern. Comparable figures have been put forward by Sinha *et al* (1979), Cilibis (1976) but Shenker (1973) has shown a lesser percentage of poor Apgar with abnormal pattern. Only 3 foetuses out of the 196 monitored died within early neonatal period. Out of these 1 died because of septicemia and jaundice, this case had reported with leaking of more than 16 hours and was an emergency case. One case had multiple congenital anomalies while one was born preterm to an eclampsia mother, both of these were also emergency cases.

Conclusion

With continuous intrapartum monitoring, we can recognize warning, danger

TABLE VII
Indications for C.S.

Grp.	C.S. %	Indication	F.H.R. Pattern	Remarks
I	2 (2)	2 fetal distress	— Danger — Warning	Cord around neck in both babies
II	7 (11.6)	4 fetal distress	— Danger patterns	2 cases of P.E.T. and Leaking p/v 1 case post date with deep transverse arrest 1 unexplained
		1 case of dystocia	— Normal pattern	Cervical dystocia
		2 cases of repeat C.S.	Normal pattern	Threatened rupture
III	6 (15)	2 cases of F.D.	— Extreme Pattern	Eclampsia and preterm
			— Danger pattern	Post date pregnancy
		4 cases of dystocia	—Normal pattern	2—cervical dystocia 1—Deep transverse arrest 1—failed induction

and extreme patterns (Tournaire) early in labour and institute proper management thus reducing the overall perinatal mortality and morbidity and also reducing the operative interference. Electronic F.H.R. monitoring should be mandatory in oxytocin stimulated labours.

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