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"Evaluation of Cardiotocography (Ctg) Monitoring For Intrapartum Foetal Surveillance and Its Correlation with Apgar Score"

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Background and objectives: *in past, mother and child are considered as one unit. Today fetus is no longer considered a maternal appendage, but it has got a separate status for its care as fetus faces faces greater risk of mortality and morbidity. Cardiotocography was incorporated in clinical obstetrics to reduce intrapartum mortality and morbidity.intrapartum monitoring has infact improved fetal outcome and normal survival is now possible in cases considered hopeless years ago. cardiotocography is a simple, safe, non invasive and economical investigation which can be done on every patient in labour. This test should be a part of intrapartum fetal surveillance. The abnormal pattern are recognized and necessary and timely intervention is done, thereby saving mother and fetus. Hence this topic has been taken to evaluate the perinatal outcome following the early recognition of abnormal CTG and early intervention made.*

Objective: *the main goal of the study was to correlate abnormal cardiotocography and perinatal outcome and. To formulate the plan of acton depending on the result and to study the outcome of pregnancy.to reduce perinatal mortality and morbidity by including cardiotocography as an routine investigation during vaginal delivery.*

Method: *the present study is a simple random sampling which includes minimum of 100 term pregnant women in labour with in a period of 15 months with abnormal cardiotography admitted in the Niloufer hospital, Hyderabad all women in active labour with singleton, term pregnancy, with cephalic presentation CTG tracings were taken, preferably 30 minutes before delivery or even earlier with FHR irregularities. CTG tracing were defined as non-reassuring and abnormal patterns as per NICE guidelines 2016. Reassuring patterns were excluded from the study. After delivery apgar score at 1 and 5 minutes were taken. NICU admission were analyzed and followed up till discharge. twin pregnancies, eclampsia, antepartum haemorrhage, preterm deliveris were excluded from the study.*

Results: *among the 100 patients 48(48%) showed nonreassuring FHR patterns, 52(52%) showed abnormal FHR patterns. Variable decelerations were commonest abnormal CTG patterns and seen in 32% of cases, next common was tachycardia in 32%, bradycardia in 30%, late deceleration in 22%, 27% of cases delivered vaginally, among them 19% were in the non-reassuring FHR group. Operative interventions were done in 73(73%) of them 55(55%) with caesarean deliveries and 18(18%) with instrumental deliveries. 1 min apgar score <7 (depressed) was 29.16% and 40.38% in non-reassuring and abnormal groups respectively with sensitivity of 90%, specificity of 19%, positive predictive value 69% and negative predictive value 97.3% 5 min apgar score <7 were 7% and 12% in non-reassuring and abnormal groups respectively with sensitivity of 77%, specificity 60%, positive predictive value 12.7% and negative predictive value 97%.admission to NICU were 13% and !*% in non-reassuring and abnormal FHR groups and 4 in instrumental vaginal delivery and 7 in vaginal delivery.*

Conclusion: *Abnormal CTG predicts the fetal outcome, ie poor Apgar score at 1 min and 5 minutes, increased rate of caesarean section and neonatal resuscitation. CTG is an important test to assess the fetal condition in intrapartum period. The sensitivity of CTG was 96%, specificity was 63%, positive predictive value was 22% and negative predictive value was 99% in the prediction of abnormal outcomes. In spite of increased operative delivery there was decreased rate of NICU admissions and neonatal deaths providing that early intervention esuscitation and will improve neonatal out come. Here by I conclude that continuous EFM should be offered and recommended for highrisk pregnancies where there is an increased risk of perinatal death.*

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I. Introduction

The practice of modern obstetrics involves the care of the mother and her fetus. Intarapartum fetal asphyxia is a major risk for neonatal morbidity and mortality. The goal of intrapartum fetal surveillance is to

reduce the incidence of intrapartum fetal asphyxia and to prevent moderate and severe fetal asphyxia. Various methods have used to assess intrapartum fetal distress. Currently the two standard methods intermittent auscultation and electronic fetal heart rate monitoring (EFM) by cardiotocograph (CTG) are used. After birth fetal asphyxia is subjectively assessed by apgar score and objectively by cord blood pH. Intermittent auscultation is simple and as safe as continuous EFM, but does not show accurate information about baseline variability or periodic changes. It requires 1:1 auscultate in obese patients.

EFM is a non – invasive method and provides information about baseline variability and is a visual sensitive record. Easy to operate, available under any hospital situation, possible to use in the absence of the obstetrician patients.EVM was used among 4% of parturients in 1980,62% in 1988, 74% in 1992 and 85% in 2002. In IV confidential enquires into still births and deaths in infancy (CESDI) report it was shown that over 50% of intrapartum deaths in normally grown foetuses weighing more than 1.5 kg were due to failure to recognize or take appropriate action on CTG abnormalities. Routine clinical practice of EFM use was to reduce perinatal mortality and long term neulogical handicaps due to intapartum hypoxia or acidosis.

One of the study showed 55% reduction of neonatal seizures and reduction of hypoxia related deaths by 1pernatal death per 1000 births at the expense of an increase in operative vaginal and caesarean delivery for suspected fetal distress by 2-3 fold. Indeed, there were great expectation, (2) that the information was of value in diagnosis fetal distress,(3) that it would direct intervention to prevent fetal death or morbidity. Hence this study was undertaken to evaluate CTG for prediction and prevention of intrapartum fetal asphyxia in a single tertiary care obstetric unit. In addition it was studied whether EFM has been associated with increased incidence of operative deliveries and also the neonatal outcomes were noted.

II. Materials and Methods

This sample random sampling study was conducted among 100 women admitted for delivery with singleton term pregnancy in vertex presentation at Niloufer hospital Hyderabad between 1st JUNE 2017 to 1st FEB 2018. Preterm deliveries, twin gestations and cases of antepartum haemorrhage were excluded. A detailed history was taken. Obstetric examination was done to come done to confirm gestational age, lie, presentation, contractions and fetal heart rate. They were monitored for contractions and fetal heart rate with intermittent auscultation and labour was augmented whenever required. CTG tracings were taken in active stage, preferably30 minute before delivery or even earlier with FHR irregularities. HUNTLEIGH-BD4000XS machine with external transducer with tocodynometer was used for CTG monitoring. Non reassuring and abnormal FHR patterns were considered as signs of fetal hypoxia and necessary intervention was done. Following delivery, Apgar score was noted at 1 minute and 5minutes. The fetal heart rate patterns were analysed according to guidelines of national institute of child health and human development research planning workshop (NICHHD) and national institute of clinical excellence (NCE) 2016 and grouped in to reassuring, non-reassuring and abnormal groups.

Normal: A CTG where all four features fall into the reassuring category.
Suspicious: A CTG whose features fall into one of the no – reassuring categories and the remainder of the reassuring.

Pathological: A CTG whose features fall into two or more non reassuring or one or more abnormal categories.

Reassuring features are those with baseline 110-160 bpm, a variability of ≥5 bpm with accelerations and absence of declaration.

Non reassuring feature are baseline between 100-109 or 161-180 bpm with a variability of < 5 bpm for (>40 minutes to <90 minutes), decelerations if early deceleration, variable deceleration or single prolonged deceleration upto 3 minutes with absences of accelerations.

Abnormal feature includes a CTG with baseline < 100 bpm, > 180 bpm or sinusoidal pattern for > 10 minutes, variability < 5 bpm for 90 minutes, atypical variable decelerations, late decelerations or single prolonged decelerations for > 3 minutes.

FHR pattern classification
The NICHD workgroup in 2008 proposed terminology of a three-tiered system to replace the older undefined terms "reassuring" and "non reassuring"

Category 1(Normal): tracings with all these findings present are strongly predictive of normal fetal acid-base status at the time of observation and the fetus can be followed in a standard manner:

- Baseline rate 110-160 bpm.
- Moderate variability,
- Absence of late, or variable decelerations,
- Early decelerations and accelerations may or may not be present.

Category 2 (indeterminate): Tracing is not predictive of abnormal fetal acid-base status, but evaluation and continued surveillance and revaluations are indicated.

- Bradycardia with normal baseline variability.
- Tachycardia.
- Minimal or marked baseline variability of FHR
- Accelerations: absence of induced accelerations after fetal stimulation.
- Periodic or episodic decelerations: longer than 2min but shorter than 10min; recurrent late decelerations with moderate baseline variability.
- Variable late decelerations with other characteristics such as slow return to baseline, overshoots of "shoulders" seen (humps one either side of deceleration).

3(Abnormal):

- Absence of baseline variability with recurrent late or variable decelerations or bradycrdia; or
- Sinusoidal fetal heart rate.

APGAR score at 1minute and 5 minutes were noted. All neonatal intensive care unit admissions were reviewed and followed up till discharge.

III. Results

The study population includes 100 women at gestation age between 37-42 weeks with singleton pregnancy who were admitted for delivery. Preterm deliveries, twin pregnancies, antepartum hemorrhage were excluded.

Table no. 1: characteristics of study population – Age group

AGE(years)	NO. OF PATIENTS
<20	**3**
20-25	**55**
26-30	**25**
31-35	**14**
>35	**3**

Table no. 2: characteristics of study population – Gravidity

GRAVIDA	NUMBEROF PATIENTS
PRIMI	**42**
GRAVIDA 2	**30**
GRAVIDA 3	**19**
GRAVIDA 4 & ABOVE	**9**

Table no. 3: characteristics of study population – Gestational age

Gestational Age	No. Of patients
37-40+6 days	**93**
41-42+6 days	**7**

Table no. 4: birth weight of babies

BIRTH WEIGHT IN GRAMS	NO OF BABIES
<2000gms	1
2000-2500gms	30
2600-3000gms	42
3100-3500gms	24
>3500gms	3

Table no. 5: associated antepartum risk factors

TYPE OF RISK FACTOR	NUMBER OF RISK FACTORS
PIH	**09**
ANAEMIA	**17**
OLIGOHYDRAMINOS	**05**

PREVIOS CAESERAN	**09**
POST TERM	**07**
ELDERLY PRIMI	**04**
Others (cardiac disease,obstructed labour, IVF Pregnancy,Cephalo pelvic dispropotionation, Rh-ve Pregnancy)	**08**
TOTAL	**62**

Table no. 6: Type of CTG abnormality in patients with risk factors

TYPE OF CTG ABNORMALITY	NUMBER OF PATIENTS WITH NO RISK FACTORS
NON REASSURING	**22(57.89%)**
ABNORMAL	**16(42.10%)**
TOTAL	**38**

Table no. 7: Type of CTG abnormality in patients with risk factors

TYPE OF CTG ABNORMALITY	NUMBER OF PATIENTS WITH NO RISK FACTORS
NON REASSURING	**26(41.93%)**
ABNORMAL	**36(58.06%)**
TOTAL	**62**

Table no. 8: Maternal risk factors and its association with NICU admissions and neonatal deaths

MATERNAL RISK FACTORS	NICU ADMISSIONS	NEONATAL DEATHS
PRESENT	24(38%)	12(19%)
ABSENT	7(29%)	3(10.3%)

Among 62 patients with risk factors 24(38%) babies required NICU stay and neonatal deaths were in 12(19%) babies. Among 38 patients without risk factors 7(29%) babies required NICU stay and neonatal deaths were in 3(10.3%) babies.

TABLE NO 9: ASSOCIATED FETAL RISK FACTORS

TABLE OF FETAL RISK FACTORS	No. OF BABIES
MECONIUM LIQOUR	**12**
IUGR	**11**
OCCIPITO POSTERIOR POSITION	**02**
TOTAL	**25**

IUGR was present in 11 cases out of them, 8 cases were delivered by caesarean section and 2 cases with instrumental vaginal delivery. In another 1 case which was also associated severe PIH was delivered normally due to high maternal risk operative intervention.

TABLE NO 10: Mode of delivery

MODE OF DELIVERY	NUMBER	AVARAGE DECISION TO DELIVERY TIME (IN MIN)
NORMAL VAGINAL DELIVERY	27	32.33
INSTRUMENTAL VAGINAL DELIVERY	18	27.50
CAESAREAN SECTION	55	35.40

TABLE NO 11: Decision to delivery interval

TIME (in MIN)	PERCENTAGE
<30	53%
30-60	42%
60-90	05%

TABLE NO. 12: Mode of delivery and its association with NICU admissions and neonatal deaths

MODE OF DELIVERY	No. OF PATIENTS	NICU ADMISSIONS	NEONATAL DEATHS
NORMAL VAGINAL DELIVERY	27	13(41.93%)	7(46.66%)
INSTRUMENTAL	18	10(32.25%)	4(26.66%)

VAGINAL DELIVERY			
CAESAREAN SECTION	55	8(25.80%)	4(26.66%)
TOTAL	100	31	15

among 100 cases 27 patients delivered by normal vaginal delivery. Out of them 13 babies admitted in NICU and 7 babies had neonatal deaths.18 cases had instrumental vaginal deliveries, out of the 10 babies had NICU admissions and 4 babies had neonatal deaths. Among 55 cases who had caesarean section 8 babies had NICU admissions and 4 babies neonatal deaths.

TABLE NO. 13: COMPARSION OF VARIOUS CTG ABNORMALITIES WITH MODE OF DELIVERY

TYOE OF CTG	**VAGINAL DELIVERY**	**INSTRUMENTAL VAGINAL DELIVERY**	**CAESAREAN DELIVRY**	**TOTAL**
NON REASSIRING	19(39.58%)	10(20.83%)	19(39.28%)	48
ABNORMAL	8(15.83%)	8(15.83%)	36(69.23%)	52

Among 48 cases with NON RESSURING CTG, 19 cases (39.58%) were delivered by caesarean section, 19 (39.58%) cases were delivered by normal vaginal delivery and 10(20.83%) cases were instrumentally delivered. Among 52 cases with ABNORMAL CTG, 36 cases (69.23%) were delivered by caesarean section, 8 (15.83%) cases were delivered by normal vaginal delivery and 8(15.38%) cases were instrumentally delivered.

TABLE NO. 14: Features of CTG – Baseline FHR

FHR PATTREN	**NUMBER OF PATIENTS**
NORMAL	38
BASELINE BRADYCARDIA	30
BASELINE TACHYCARIA	32

TABLE NO.15: Features of CTG – Variability

VARIABILITYPATTERN	**NUMBER OF PATIENTS**
ABSENT	24
MINIMAL VARIABILITY (1-5 BEATS/min)	36
MODERATE VARIABLITY (6-25 beats/MIN)	40
MARKED VARIABILITY (>25 beats/min)	0

TABLE NO.16: Features of CTG – Accelerations

PRESENT	59
ABSENT	41

TABLE NO.17: Features of CTG – Decelerations

ABSENT	27
PRESENT	
a. EARLY	13
b. LATE	22
c. VARIABLE	32
d. PROLONGED	06

TABLE NO.18: APGAR score at 1 minute

APGAR SCORE AT 1 MIN	**NUMBER OF PATIENTS**
>7	68 (68%)
<7	32 (32%)

Among 100 cases, babies with 1 minute APGSR SCORE >7 were present in 68(68%) and minute APGAR SCORE <7 in 32(32%) of babies.

TABLE NO.19: APGAR score at 5 minutes

APGAR SCORE AT 5 MIN	NUMBER OF PATIENTS
>7	84 (84%)
<7	16 (16%)

In present study, babies with 5 minutes APGAR SCORE >7 were present in 84(84%) and 5 minute APGAR SCORE <7 in 16(16%) of babies.

TABLE NO.20: NICU admissions

NICU ADMISSION	NUMBER OF BABIES
YES	15
NO	85

TABLE NO.21: Neonatal deaths

NEONATAL DEATHS	NUMBER OF BABIES
YES	15
NO	85

Total number of babies required NICU stay were 31 and among those babies 15 (48.38%) were expired. The mean NICU stay in our study was 4.87 days.

TABLE NO.22: CAUSES OF NEONATAL DEATH

CAUSE OF DEATH	NUMBER OF BABIES
BIRTH ASPHYXIA	07(46.66%)
RESPIRATORY DISTRESS SYNDROME	03(20%)
MECONIUM ASPIRATION SYNDROME	04(26.66%)
HIE	01(6.66%)
TOTAL	15

TABLE NO.23: ASSOSCIATION BETWEEN DIFFERENT FEATURES OF CTG WITH APGAR <7 AT 1 Min AND <7 at 5 Min, NICU ADMISSIONS AND NEONATAL DEATHS

	NO OF CASES WITH APGAR <7 AT 1MIN	NO OF CASES WITH APGAR <7 AT 5 MIN	NICU ADMISSIONS	NEONATAL DEATH
BASELINE FHR				
a. NORMAL	11(37.9%)	04(14.2%)	11(35.48%)	05(33.33%)
b. TACHYCARDIA	07(24.1%)	06(21.4%)	07(22.58%)	05(33.33%)
c. BRADYCARIA	11(37.9%)	08(28.5%)	13(41.93%)	05(33.33%)
VARIABILITY				
a.ABSENT	10(34.4%)	08(44.4%)	11(35.48%)	09(60%)
b. MINIMAL	08(27.58%)	05(27.7%)	10(32.25%)	01(6.66%)
c. MODERATE	11(37.93%)	05(27.7%)	10(32.25%)	0(33.33%)
d. ,ARKED	00	00	00	00
ACCELERATION				
a.PRESENT	18(62.0%)	13(72.2%)	19(61.29%)	11(73.3%)
b. ABSENT	11(37.9%)	05(27.77%)	12(38.7%)	04(26.66%)
DECLERATION				
ABSENT	5(17.24%)	3(16.66%)	05(16.1%)	03 (20%)
PRESENT				
a. EARLY	3(10.34%)	1(5.55%)	03(9.67%)	03(20%)
b. LATE	11(37.93%)	6(33.3%(	10(32.25%)	06(40%)
c. VARIABLE	9(31.03%)	7(38.8%)	12(38.7%)	03 (20%)
d. PROLONGED	1(3.44%)	1(5.55%)	01(3.22%)	00

Table no. 24: Type of CTG abnormality (NICE)

TYPE OF CTG ABNORMALITY (NICE)	NUMBER OF PATIENTS
NON REASSURING	48
ABNORMAL	52

Table no. 25: Type of CTG abnormality (NICHHD)

TYPE OF CTG ABNORMALITY	NO. OF PATIENTS

CAT 2	66
CAT 3	34

Table no. 26: Correlation of CTG abnormality (NICE) with APGAR score at 1 minute

	TYPE OF CTG (NICE)	
<7	12(25%)	20(38.46%)
>7	36(75%)	32(61.53%)
TOTAL	48(100%)	52(100%)

Table no. 27: Correlation of CTG abnormality (NICHHD) with APGAR score at 1 minute

APGAR AT 1 MIN	CAT 2	CAT 3
<7	14(21.21%)	18(52.94%)
>7	52(78.78%)	16(47.05%)
TOTAL	66(100%)	34(100%)

Table no. 28: Correlation of CTG abnormality (NICE) with APGAR score at 5 minute

	TYPE OF CTG (NICE)	
APGAR AT 5 MIN	NON REASSURING	ABNORMAL
<7	04(8.3%)	12(23.07%)
>7	44(91.6%)	40(80.76%)
TOTAL	48(100%)	52(100%)

Among 48 patients with NON REASSURING CTG pattern 04(8.03%) patients had APGAR score <7 at 5 minutes and among 52 patients with ABNORMAL CTG pattern 12 (23.07%) patients had APGAR score <7 at 5 minutes.

Table no. 29: Correlation of CTG abnormality (NICHHD) with APGAR score at 5 minute

APGAR AT 5 MIN	CAT 2	CAT 3
<7	7	9
>7	59	25
TOTAL	66	34

Among 66 patients with CATOGERY 2 5 minute APGAR score was <7 in 7 cases and >7 in 59 cases. Among 34 patients with CATOGERY 3 5 minute APGAR score was <7 in 9 cases and >7 in 25 cases.

Table no. 30: Correlation of FHR pattern with NICU admissions and neonatal deaths

TYPE OF CTG	NICU ADMISSIONS	NEONATAL DEATH
NON REASSURING	13(27.08%)	3(6.25%)
ABNORMAL	18(34.6%)	12(23.07%)

Among 48 patients with NON REASSURING CTG pattern 13(27.08%) patient babies required NICU admission and 3 (6.25%) babies had neonatal deaths. Among 52 patients with ABNORMAL CTG pattern 18 (34.6%) patient babies required NICU admission and 12(23.07) babies had neonatal deaths

IV. Discussion

CHARECTERISTICS OF STUDY POPULATION: In the present the study population includes 100 women with mean age of population being 25±4. 18 years and meangestational age in weeks was 38.6 days.

MODE OF DELIVERY IN PATIENTS WITH AND WITHOUT RISK FACTORS: in our study 38 pregnancies were of low risk and 16 delivered by caesarean section and 15 by normal vaginal delivery and 7 of them delivered by instrumental vaginal delivery. Patients with antepartum risk factors were 62 among them 39 delivered by caesarean section and 12 by normal spontaneous vaginal delivery and 11 of them delivered by instrumental vaginal delivery. Caesarean section rate was more in patients with risk factors where early decision might be taken for surgery in view of associated risk factors.

NEONATAL OUTCOME IN PATIENTS WITH AND WITHOUT RISK FACTORS: in our study where CTG is used for intrapartum asphyxia and early intervention. Among 38 pregnancies with low risk factors, 1 minute Apgar score was <7 in 6 cases, 5 minute apgar score < 7 in 3 cases. Patients with high risk factors were 62, among them 1 minute apgar score of <7 in 26 cases , 5 minute apgar score < 7 in 13 cases. The incidence of low APGAR scores at 1 minute and 5 minutes was less in patients without risk factors with CTG abnormality,

hence forth suggesting that CTG monitoring as an important tool for early intervention and improved fetal outcome.

TYPE OF CTG ABNORMALITY AND ITS RELATION TO FETAL OUTCOME: in our present study late decelerations showing worst prognosis with 6 neonatal deaths and 10 NICU admissions; bradycardia being the common with 5 neonatal deaths and 13 NICU admissions. With the details of the study being as follows. Late decelerations were seen in 22 patients and operative intervention was done in 16 cases (12 cases by caesarean section; 4 cases by instrumental deliveries.); NICU admissions in 10 cases and 6 neonatal deaths occurred in this group. Variable declarations were seen in 32 cases and intervention was done in 22 cases (18 caesarean section and 7 instrumental deliveries), NICU admissions were 7 and 5 perinatal deaths. Tachycardia was seen in 32 cases and intervention was done in 5 cases. (16 caesarean section and 7 instrumental deliveries), NICU admissions were 7 and 5 perinatal death. Prolonged decelerations were seen in 6 cases. Intervention was done in 5 cases (2 caesarean section and 3 instrumental deliveries : 1 NICU admissions and 0 perinatal deaths in this group. Bradycardia was seen in 30 cases, intervention was done in 22 of them (17 cesarean sections and 5 instrumental deliveries). 13 nicu admissions and 5 perinatal deaths in this group. In our study CTG monitoring was done continuously in active phase and selected FHR patterns were recorded for the last 30 minutes prior to delivery to predict the fetal outcome. Late decelerations, prolonged decelerations, variable decelerations and bradycardia were most specific with detailed results as mentioned above. Thus results being comparable to the above study.

SENSITIVITY AND SPECIFICITY OF THE PARAMETERS INCLUDED IN STUDY:

STUDY	SENSITIVITY FOR RISK OF CESAREAN SECTION	SPECIFICITY FOR RISK CESAREAN SECTION
Bayaram Alimamik et all	35%	66%
Precent study	55%	63%

EFFECT OF CTG CESAREAN SECTION RATES: the present study showed high number of false positive results. Out of 100% CTG abnormalities only 31% were valid (neonates requiring NICU admission). In remaining 69% of neonates although their CTG findings are suggestive of fetal distress and hypoxia, were born healthy. Results regarding false positive rates and caesarean section rates were comparable to that of Cochrane study.

PREDECTIVE ACCURACY OF APGAR SCORES IN PREICTING FETAL OUTCOME: the prevalence of abnormal apgar scores at five minutes or abnormal umbilical cord gas pH or base excess values among neonates delivered by caesarean section for CTG abnormality is less than 10% suggesting that the number of caesarean sections performed for this indication is more. Electronic fetal monitoring remains a non-specific method for detection of fetal compromise in the intrapartum period. In our study Apgar at one minute and 5 minutes was taken into consideration as a measure for fetal outcome, which is said to have greatest predictive accuracy stenthening the study. Regarding the caesarean sections done for CTG abnormality the rate were comparable to the study. The prevalence of abnormal Apgar scores at five minutes among neonates delivered by caesarean section for CTG abnormality was 9 (16.36%). Thus, using of fetal heart rate abnormalities alone as a measure of diagnosis of fetal distress during labour is a contributing factor of increasing rate of caesarean sections. Although more advanced methods like fetal scalp blood sampling detect fetal acidosis and thus the risk of birth asphyxia, due to high cost of the procedure and non-availability in government hospital where the study is being done. Continuous CTG monitoring was used to predict the fetal risk and neonatal outcome.

V. Conclusion

Considering the results of the study and the importance of birth asphyxia, several factors, including gestational age and risk factor in the mother can affect FHR features. Hence CTG analysis is integrated with other clinical information and comprehensive interpretation is done which shows that the incidents of low APGAR scores at one min and 5 min is more in patients with risk factors and less in patients without risk factors with CTG abnormality hence forth caesarean section rate also being more in patients with risk factors. The above proving CTG monitoring ads an important tool for early inter venation and improved fetal outcome. Abnormal CTG predicts the fetal outcome, ie poor Apgar score at 1min and 5 minutes, increased rate of caesarean section and neonatal resuscitation. The sensitivity of CTG was 96%, specificity was 63%, positive predictive value was 22% and negative predictive value was 99% in the prediction of abnormal outcomes.

Number of NICU admissions and neonatal deaths were high in patients with abnormal CTG with poor APGAR at min. Fetal monitoring using cardiotocography is associated with a considerable false positive results and subsequent surgical intervention that might have not been necessary. However in a setting where this study has been done next level of tests like fetal scalp blood ph are not available CTG monitoring and

intervention is the best possible method of improving neonatal outcome at the cost of increased caesarean section rate. Here by I conclude that continuous EFM should be offered and recommended for high-risk pregnancies where an increased risk of perinatal deaths is.

References

[1]. James AL, Heather Pickersgill, Helen Killen, E Jane Derrick. The prediction and preventation of intrapartum fetal asphyxia in term pregnancies. Am J Obstet Gynecol 2001 ; 724-30

[2]. OA Jibodu, S. Arulkumaran. Intrapartum fetal monitoring, 2nd edition. Orient Logman Pvt. Ltd. 2005 ; 70-85.

[3]. Pellantova S. Validity of CTG monitoring for the diagnosis of acute fetal hypoxia medica (BRNO) 2000 ; 73(4) ; 251-260.

[4]. Vintzeleos AM, Npchimson DK, Guzmaner, Knuppel RA. Lake M, Schrifin BS. Ontra[artum electronic fetal heart rate monitoring versus intermittent auscultation ; A meta-analysis. Obstet gynecol 1995 ; 85(1) ; 149-155.

[5]. ACOG, Practice bulletin No. 62. Intrapartum fetal heart rate monitoring. Obst Gynecol, 2005 ; 105(5) : 1161-68.

[6]. Susan Gouge, chrstine Hendeson CTG made easy 2 edition Churchill Livingstone 1999 ; 26(4) : 31-39.

[7]. Frank H. Boehm, Intrapartum fetal heart rate monitoring obst Gynecol Clin N AM. 1999 ; 26(4) : 623-637.

[8]. James FS, Honey Onstad – Assessment of the fetus : intermittent Auscultation, Electronic fetal heart rate tracing, and fetal pulse oximetry – Obstet Gynecol Clin N Am. 2005 ; 32: 245-254.

[9]. The use of Electronic fetal monitoring. The use and interpretation of cardiotocography in intrapartum fetal survillence. Evidence based clinical guideline number 9. Clinical effectiveness support unit. RCOG 2001.

[10]. T Murphy Goodwin. Clinical implications of perinatal depression. Obst Gynecol clin N Am 1999: 26(4) : 711-721.

[11]. David IH, Levide wright, David AN, John NW, Marcos J Pupkin and Thomas Koch. Indicators of perinatal asphyxia. Am JOG 1987 ; 157(4) : 843-846.

[12]. Frank OP, James NM, Sue HP, Rick WM, John AL, G Rodney meeks, Edsel T Bucovez John CM. Correlation of neonatal acid – base status with Apgar scores and fetal heart rate tracings. Am J Obstet Gynecol 1986 ; 154 : 1306-11

[13]. Bruce EJ, Timothy RBJ, John PN, umbilical cord blood pH and Apgar scores as an index of neonatal health. Am J Obst Gynecol 1987 ; 157 (04) : 843-846.

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