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ABNORMAL CARDIOTOCOGRAPHY; PERINATAL OUTCOME

Dr. Saima Perveen[1], Dr. Farrukh Naheed[2], Dr. Mussarat Sultana[3], Dr. Azra Sultana[4]

1. Assistant Professor Gynae and Obstetrics
   MBBS Medical College, Mirpur AJK
2. Gynaecologist
   Social Security Hospital, Lahore
3. Gynaecologist
   NESCOM Hospital, Islamabad
4. Professor of Gynae.
   Baqai Medical University, Karachi

Correspondence Address:
Dr. Saima Parveen
Gynae and Obst. Deptt.
MBBS Medical College, Mirpur (AJK)
C/O: 112MDC CMH Kharian Cantt
drsaima71@gmail.com

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ABSTRACT… Objective: To observe the effect of abnormal Cardiotocography to delivery interval on perinatal outcome in terms of Apgar score. **Study design:** Descriptive case series study. P**lace and duration of study:** Baqai Medical University department of obstetrics and gynecology Fatima Hospital Karachi from Jan 2011 to July 2011. **Material and method:** One hundred patients were registered who had pathological Cardiotocography. Bishop's score was noted and decision to deliver the patient was made according to the abnormality, and bishop's score. If bishop's score was good and vaginal delivery was imminent, then her second stage was shortened by operative vaginal delivery. Fetal distress was managed by left lateral position, O2 inhalation and hydration. If delivery was not imminent then decision of urgent LSCS was made, meanwhile fetal distress was managed. Decision – delivery interval was recorded, and fetal outcome was noted in terms of Apgar score and resuscitation needed. **Results:** During this period one hundred pregnant women at term had pathological CTG for which they were delivered urgently. Among them 12% of parturients were delivered within 30 min ,68% delivered within 30-60 min , 12% delivered in 60-90 min and only 8% were delivered in 90-120 min. Seventy four (74%) of parturients were delivered by emergency lower segment caesarean section and 26% of parturients were delivered by instrumental vaginal delivery. Fetal outcome in terms of 1 min Apgar score ,38% of neonates had Apgar score of <7 ,46% had >7 and 16% had Apgar score of <5. This group of neonates required resuscitation and 5 min Apgar was good. No neonate was admitted in Neonatal unit. **Conclusions:** In this study it is concluded that with fetal heart rate abnormality, if fetus is delivered within 60 min, it is not associated with poor fetal and neonatal outcome, provided fetal distress is managed while preparing for emergency lower segment caesarean section.

Key worlds: Fetal distress, CTG, LSCS, Apgar score

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INTRODUCTION

Not long ago, the fetus was considered a passenger not a separate patient. It was believed that nothing could be done to improve fetal health inside the uterine box. The concept of the fetus as a patient has evolved in the twentieth century and now it is fundamental and firmly establishes the obstetric care[1]. Fetal monitoring in a wide sense means fetal surveillance but practically, it is an indirect way to measure fetal wellbeing or the adequacy of fetal oxygenation and as such it is an integral part of the concept of fetus as patient[2].

The primary goal of fetal monitoring is a healthy new born with a healthy mother. There are several methods of antepartum and intrapartum fetal monitoring i.e. fetal movement assessment, periodic fetal heart rate auscultation, continuous fetal heart rate monitoring, fetal biophysical profile, stimulation technique like scalp stimulation and vibroacoustic stimulation, amniotic fluid analysis, fetal blood evaluation and Doppler velocimetry[3,4].

In 1958 Hon, the father of the modern FHR monitoring developed the method of continuous recording. He described 3 patterns of FHR deceleration early, variable and late, which were related to head compression, cord compression and uteroplacental insufficiency respectively[5].

In 1952, Virginia Apgar MD, proposed to assess the clinical condition of newborns during the first minute of life and to evaluate anesthetic and obstetrical practices. The author proposed five objectives and easily measured clinical signs, cardiac frequency, respiratory effort, muscle

tone, irritability and color. The test was later named "Apgar Score. Poor Apgar score beyond 15 minutes is predictive of poor neurological prognosis[6,7].

In this study it is focused only on one parameter of fetal surveillance i.e. electronic monitoring. If we are able to establish relationship between abnormal CTG to delivery interval and neonatal apgar score, this will have significant implications upon clinical decision making of obstetrician. Obstetrician may be able to reliably identify high risk pregnancies requiring lower segment caesarean section verses low risk pregnancies needing normal vaginal birth. This may result in reduced neonatal and maternal morbidity and mortality.

MATERIAL AND METHOD

This study included 100 full term pregnant women with pathological cardiotocography admitted for delivery to Fatima hospital Baqai Medical University department of Obstetrics and Gynaecology Karachi between January 2011 to July 2011.Women were included if they were within 37-41 weeks of gestation and singleton pregnancy. Women with preterm labour, antepartum haemorrhage, hypertention, diabetes mellitus, previous scarr and abnormal fetus were excluded from the study.

Data was collected on a specially designed proforma and includes parturients bio data like name, age, registration no. parity, LMP, EDD and gestational age. Information about onset of labor, mode of delivery, abnormal CTG to delivery interval, information about neonates was also noted on proforma. After taking informed consent, intermittent intrapartum CTG of all parturients and twice daily CTG of low risk admitted antenatal patients was taken. Bishop's score was noted and accordingly mode of delivery was decided. Fetal distress was managed with oxygen inhalation, hydration, and left lateral position. Interval between abnormal CTG and delivery was noted, fetal condition was assessed in terms of Apgar score, whether resuscitation was done or not was recorded. Whether admitted in nursery or not, if admitted, treatment given, duration of stay and condition at discharge was noted. Delay in the delivery was not made for sake of study, delay was only time taken for preparation of caesarean and availability of theater. Data was analyzed by software program SPSS Version10.

RESULTS

Mean maternal age was 32 with SD ± 2.6. Sixty six (66%) women were primigravida, 18% were >P5 and 16% were between P2-5 (fig-1). Mean gestational age was 39 weeks SD ± 1 week. Eighteen (18%) had fetal bradycardia,16% had type 1 deceleration and decreased beat to beat variability, 24% had type ll deceleration,42% had variable deceleration (fig-2).

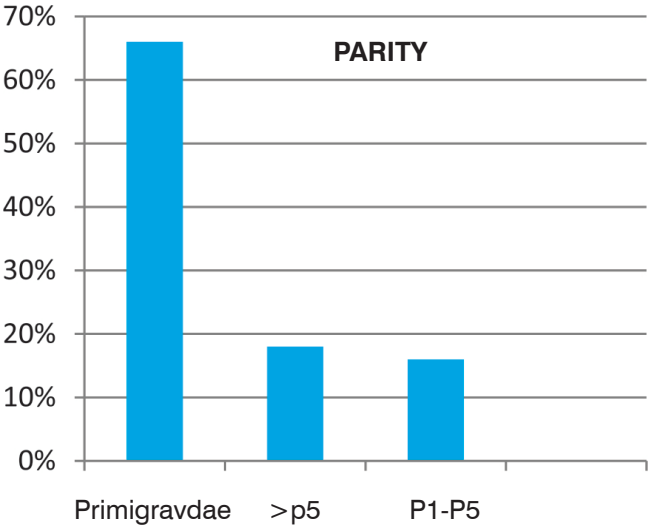

Fig-1. Parity

When CTG abnormality noticed, 26% of parturients had bishop score 9-10, 42% had 7-8, and 32% had bishop score 0f 5-6.(fig -3). Forty two (42%) of women had spontaneous onset of labor and 58% of women had been induced. Among the induction group in 16% of women induction of labor was done because of premature rupture of membrane and in 42% of women it was done routinely at 41 weeks of pregnancy to avoid prolonged pregnancy. In 42 % of women induction of labor was done with vaginal prostaglandin and only 14 % of women labor was induced with oxytocin. Seventy four (74%) of women were delivered by emergency lower segment caesarean section and

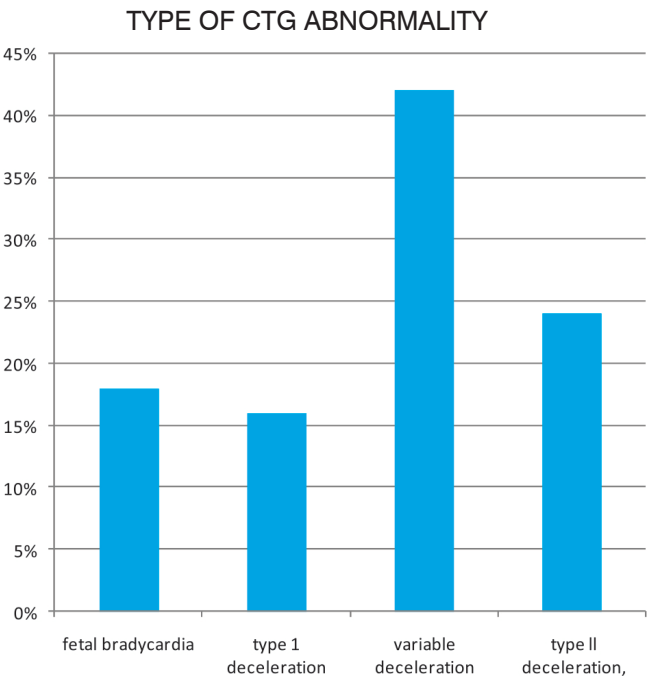

Fig-2. Type of CTG abnormality

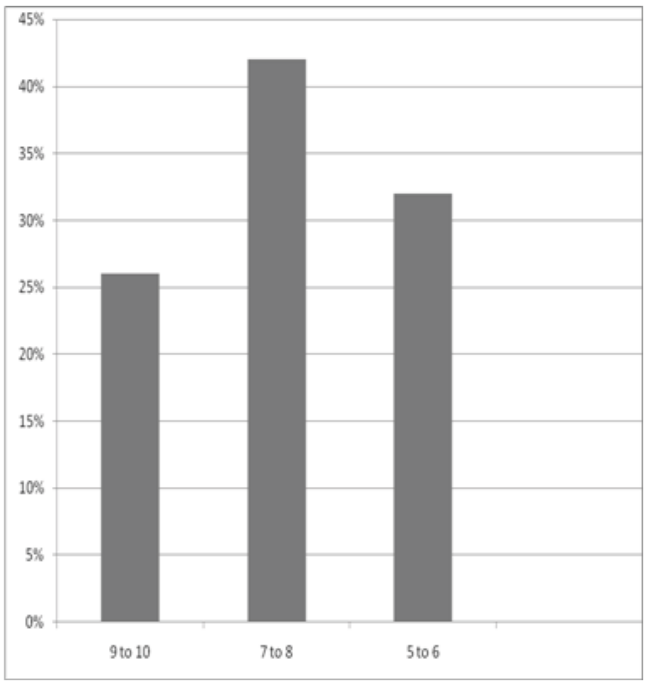

Fig-3. Bishop's score

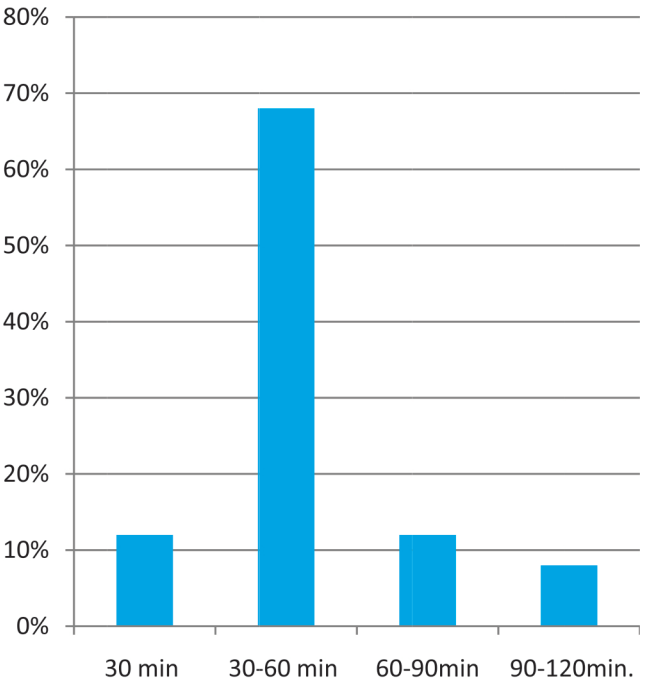

Fig-4. Decision to delivery interval

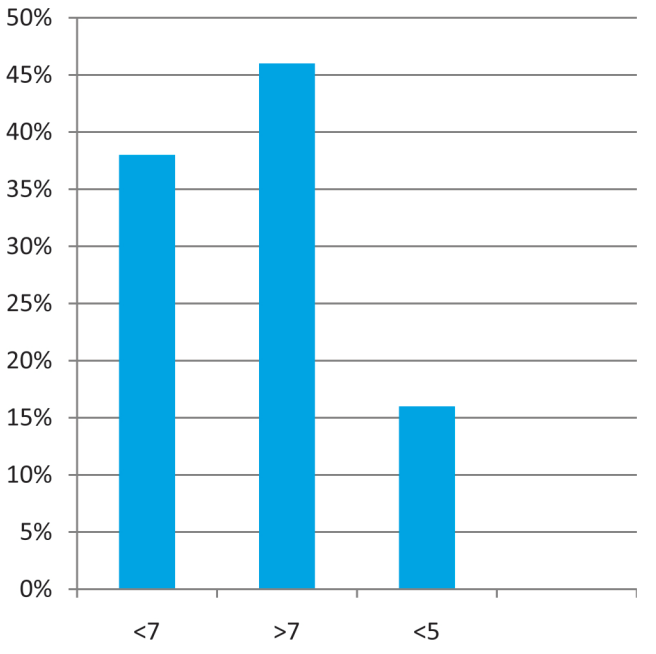

Fig-5. Apgar score

26% of parturient were delivered by instrumental vaginal delivery. Eight (8%) of women were delivered by outlet and low cavity forceps and 10% were delivered by vacuum delivery.

Twelve (12%) of parturients delivered within 30 min ,68% delivered within 30-60 min , 12% delivered in 60-90 min and only 8% delivered in 90-120 min(fig-4). Thirty eight (38%) of neonates had Apgar score between5-7, 46% had >7 and 16% had Apgar score of <5(fig-5). This group of neonates required resuscitation and 5 min Apgar was >8. Mean birth weight was 3.1 Kg with SD ± 0.45 kg. Fifty four (54%) of fetuses were male and 46% were female.

DISCUSSION

There is no proved impact of cardiac fetal monitoring (continuous or intermittent) on perinatal mortality. Incidence of fetal distress is increasing because of vigilant intrapartum monitoring and increased induction of labour. We try to pick up early fetal compromise and by managing it properly to decrease the incidence of compromised babies. The aim of this study was to look that once a FHR abnormality is diagnosed, what is the urgency of delivery and how quickly we should deliver the fetus without increasing any fetal morbidity[8].

It was found in this study that with fetal heart rate abnormality if fetus was delivered up to 60 min it was not associated with poor fetal and neonatal outcome, these babies did not require resuscitation and their apgar score at 5 min was well. The same results were found in a study conducted at national institute of child health and human development in 2006 which concluded that emergency deliveries were commenced more than 30 min after the decision to operate and the majority were for non-reassuring FHR tracing, in these cases adverse neonatal outcome were not increased[9,10].

Almost same results were found in another study conducted in the department of obstetrics and gynaecology, university of mississipi medical center, concluded that although cesarean decision to incision time >30 min is desirable goal for the fetus in distress, failure to achieve the goal is not associated with a measurable negative impact on newborn outcome[11].

Another local study carried out in the department of obstetrics and gynaecology ,all India institute of medical sciences concluded that non reassuring FHR detected on CTG did not correlate well with decrease neonatal outcome ,there was no significant difference in immediate adverse neonatal outcome whether the D-D interval was < or >30 minutes[12,13].

In this study a significant association was found between fetal heart rate abnormality and induction of labour with prostaglandins, 58% were in induction group as compared to spontaneous labour.

Daly N, Brennan D ,Foley M found in his study that CTG is a reliable screening indicator of fetal wellbeing in women presenting with perception of reduced fetal movement in third trimester, abnormal pregnancy outcomes were more common when initial CTG was abnormal or persistently non reassuring[16].

Alpaslan Kaban, Sema Karakas etal compared two groups of patients based on CTG and found no significant difference between the fetal distress and normal groups in terms of apgar score The most important limitation of our study was that we have not compared with normal group[17].

Other incidental finding in the study were that fetal distress was more in primigravidas as compared to multigravida ,that may be because of prolonged duration of labour[14,15].

The most important limitation of our study was the small number of patients. More extensive studies are needed to determine the success of CTG for predicting the perinatal outcome.

CONCLUSIONS

In this study it was concluded that with fetal heart rate abnormality if fetus was delivered up to 60 min

it was not associated with poor fetal and neonatal outcome, if fetal distress is being managed mean while it is preparing for emergency LSCS. Abnormality in CTG alone is not well associated with poor fetal outcome so other fetal investigation like scalp PH should also be freely available to assess fetus. Decision to operate should not be made solely on abnormal CTG.

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