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VARIABLE DECELERATIONS IN ADMISSION TEST AND ITS CORRELATION WITH PERINATAL OUTCOME

Gynaecology

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ABSTRACT

AIMS&OBJECTIVES: Correlate the perinatal outcome with variable decelerations seen in admission test done in patients with spontaneous onset of labor pains.

MATERIALS AND METHODS: This data was retrieved from medical records in Department of Obstetrics and Gynaecology in A.J. Institute of Medical Sciences and Research Centre during the period January to December 2017 admitted with spontaneous labour pains . The study design is a retrospective observational study.

RESULTS : In our study, 489 patients who were in spontaneous labour at term,429 had reassuring CTG. 60 patients had abnormal CTG traces that is an incidence of 12.2% abnormal traces in patients with spontaneous onset of labour at term. Out of these 60 abnormal traces, 36 had variable decelerations, among that 12 had atypical variable decelerations and 24 had typical variable decelerations. Thus incidence of variable decelerations in admission test was 7.3% among patients who had spontaneous labour at term. Mode of delivery , associated co-morbid conditions ,APGAR score ,NICU admissions were compared with reassuaring traces and variable decelerations .

CONCLUSION: In our study this poor neonatal outcome not related to variable decelerations in admission test had other obstetrical complications which contribute to intervention in labour affecting maternal and fetal outcome.

KEYWORDS

APGAR , NICU , Labour

INTRODUCTION

Pregnancy and childbirth is a normal physiological process with great pathological potential. Most of the pregnancies progress normally but some pregnancies are more complex.The antenatal and intra-partum conditions place the mother, or the developing fetus or both at a higher risk for complications. Some instances can lead to adverse outcome resulting in immediate and late neonatal and maternal problems. The obstetricians are more concerned with the early recognition of fetal distress during labour in order to avoid such adverse outcomes.Such an adverse outcome should be detected at the earliest point of time by an effective surveillance method. Intermittent auscultation, continuous electronic foetal heart rate (FHR) monitoring and invasive techniques like foetal blood gas analysis are the available methods for such surveillance (1).Cardiotocography (CTG) is the graphic presentation of the foetal heart activity and uterine contractions to detect foetal hypoxia.(2)The interpretation of foetal heart rate (FHR) patterns duringlabour remains the most controversial and problematic issue in obstetrics. Out of many FHR parameters, the FHR decelerations seem most common and important but also complex to interpret. Leading experts from New Zealand and USA concluded that the FHR decelerations are “center-stage” in interpretation of CTG.North American and the current British National Institute for Health and Clinical Excellence (NICE) guidelines state that “variable” decelerations are most common and “true uniform early” decelerations are very rare (3).Variable decelerations occur because of umbilical cord compression. At the onset of a uterine contraction, the soft, thin walled umbilical vein with its low intraluminal pressure is compressed. This causes a slight reduction in foetal blood volume with resultant stimulation of the sympathetic nervous system and an increase in foetal heart rate. This is the first 'shoulder' seen on the CTG trace, prior to the drop in the foetal heart rate. The continued uterine contraction causes compression of the umbilical artery leading to an increased systemic vascular resistance and systemic hypertension resulting in a swift drop in the foetal heart rate. This reflex response to systemic hypertension is mediated by stimulation of the baroreceptors. As the contraction eases, this stimulation of the baroreceptors is removed as the umbilical arteries are no longer compressed leading to a quick recovery in the foetal heart rate to its normal baseline. The second shoulder results from the umbilical vein, which is thin-walled and collapsible being compressed slightly longer than the umbilical artery leading to a relative foetal hypotension and resultant sympathetic stimulation.Variable deceleration can be typical or atypical ; reassuring or non-reassuring

- **Atypical features include:**

1. Decelerations to less than 70 bpm lasting more than 60 secs.
2. Loss of variability in baseline FHR and in the trough of the deceleration.
3. Biphasic deceleration
4. Prolonged secondary acceleration (post deceleration smooth overshoot of more than 20 bpm increase and / or lasting more than 20 secs.
5. Slow return to baseline.
6. Continuation of baseline at a lower level than prior to the deceleration.
7. The presence of foetal tachycardia.

The perinatal outcome with early and late decelerations has been studied in various studies. However, association of variable decelerations with perinatal outcome has been a field less studied and analysed. Hence we proposed to study the labour outcome in presence of variable decelerationin admission CTG records getting admitted to labour theatre.

AIMS& OBJECTIVES:

1) Correlate the perinatal outcome with variable decelerations seen in admission test done in patients with spontaneous onset of labor pains.

MATERIALS AND METHODS:

1. Source of data:

This study has sourced data of patients with spontaneous labour at term pregnancy with an admission test on admission. The data was retrieved from medical records in Department of Obstetrics and Gynaecology at A.J. Institute of Medical Sciences and Research Centre.

2. Trial design:

The study design is a Retrospective observational study, correlating variable deceleration in admission test with the perinatal outcome.

3. Duration:

Data of patients admitted during the period January to December 2017.

4. Method of collection of data:

Retrospective retrieval of data from files of all pregnant patients admitted at term with spontaneous labor was analysed for the following data. Admission test, type of deceleration, subsequent deceleration during progress of labour, co morbidities, mode of delivery, APGAR score at 1 and 5 minutes, NICU admission for each patient was noted.

Variable Deceleration was defined as variable intermittent usually abrupt decrease in FHR below the baseline by at least 15bpm lasting 15 seconds to 2 minutes from onset to return to baseline. It could be of two types typical or atypical. Atypical features included, Decelerations to less than 70 bpm lasting more than 60 secs; loss in variability in baseline FHR and in the trough of decelerations; Biphasic Decelerations; Prolonged secondary acceleration; slow return to baseline; continuation of baseline at a lower level than prior to deceleration; the presence of foetal tachycardia.

5. SELECTION CRITERIA:

A. Inclusion criteria:

1) All pregnant women at term admitted with spontaneous labour.

B. Exclusion criteria:

1) Patients with no admission test at admission in labour .

RESULTS

During the year 2017, out of total 1650 deliveries 489 patients had come with spontaneous onset of labour. All the 489 patients who came with spontaneous onset of labour pains had an admission test done in labour and were included in the study. Among these 489 patients, 360 had normal vaginal delivery, 9 underwent operative vaginal delivery and 120 underwent caesarean section.

Out of all 489 admission test traces, 429 were reassuring and 60 were abnormal traces. Among 60 abnormal traces 36 had variable decelerations in which 12 were atypical variable decelerations and 24 were typical variable decelerations.

In 36 patients with variable decelerations, 16 patients had other co-morbid conditions in pregnancy. 5 of these patients had Pre-eclampsia, 2 had overt diabetes and 3 had hypothyroidism. Amongst the 5 pre-eclamptic patients, 3 had atypical variable decelerations and 2 had typical variable decelerations. Both the overt diabetic patients had typical variable decelerations. In 3 patients with hypothyroidism, 1 patient had atypical variable decelerations and 2 had typical variable deceleration. Further the incidence of co morbid conditions in patients with variable decelerations in admission test were similar to that in patients with a reassuring admission traces. 6 patients with variable decelerations had low-lying placentas, 4 had typical decelerations and 2 had atypical decelerations .The incidence of low lying placentas was higher in patients with variable decelerations in admission test as compared to patients with reassuring admission traces .

Comorbidity	Reassuring Traces (429)	Other Decele Ration (24)	Variable Decelerations	
			Atypical (12)	Typical (24)
Pih	99 (23%)	4 (17%)	3 (25%)	2 (8%)
Diabetes	29 (7%)	2 (8%)	0	2 (8%)
Hypothyroid	10 (3%)	4 (17%)	1 (8%)	2 (8%)
Malpresen-Tations	9 (2%)	0	0	0
Placental Abnormalit-es–low Lying	10 (2%)	1 (4%)	2 (17%)	4 (17 %)
No Comorbid Conditions	272 (63%)	13 (54%)	6 (50%)	14(59%)

Out of 36 patients variable decelerations in admission test , none of the patients had persistent variable decelerations or any other decelerations during progression of labour .

Total no of variable decelerations	No of persistent variable decelerations in progression of labour
36	0

Out of 429 patients with admission test, 108 patients had fetal distress in labour, 32 with meconium stained liquor with no decelerations and 76 with late deceleration. All these patients had a reassuring admission traces and none of them had variable decelerations in the admission test.

Fetal Distress	Reassuaring Traces	Variable Decelerations
Meconium Stained Liquor	32	0
Late Decelerations	76	0

Comparing decelerations with mode of delivery, in our study out of the 36 patients with variable decelerations in admission test, normal vaginal delivery was seen in 22 patients with atypical variable decelerations and 9 with typical variable decelerations. Operative vaginal delivery was seen in 3 patients with atypical variable decelerations and 2 with typical variable decelerations. There were no patients who underwent caesarean section among the group who had variable decelerations in admission test. In comparison to reassuring admission traces the incidence of normal vaginal delivery was higher and operative delivery was lower among patients with variable decelerations in admission test .

Mode Of Delivery	Reassuring Traces (429)	Other Deceler Ations (24)	Variable Decelerations	
			Typical (24)	Atypical (12)
Normal Vaginal delivery	311(72%)	18(75%)	22(92%)	9(75%)
Operative vaginal delivery	3(1%)	1(5%)	2(8%)	3(25%)
Caesarean section	115(27%)	5(20%)	0	0

Comparing decelerations with mode of delivery, in our study out of the 36 patients with variable decelerations in admission test, normal vaginal delivery was seen in 22 patients with atypical variable decelerations and 9 with typical variable decelerations. Operative vaginal delivery was seen in 3 patients with atypical variable decelerations and 2 with typical variable decelerations. There were no patients who underwent caesarean section among the group who had variable decelerations in admission test. In comparison to reassuring admission traces the incidence of normal vaginal delivery was higher and operative delivery was lower among patients with variable decelerations in admission test .

Apgar<7	Typical Deceleration	Atypical Deceleration	Nicu Admission
1 Minute	5	3	-
5 Minute	1	2	3

The 3 babies who had NICU admission, 2 had cord around neck and 1 had a true knot .The incidence of cord around the neck or true knot is much higher in patients with variable decelerations in admission test in comparison to reassuring admission test.

Abnormal Cord Findings	Reassuaring Traces	Other Deceler Ations	Variable Decelerations	
			Atypical	Typical
Cord Around Neck	15(3.5%)	2 (8.3%)	2(16.7%)	0
True Knot	1(<1%)	0	0	1(4.2%)

DISCUSSION:

The most common type of decelerations seen in admission test in labour patients are variable decelerations. Variable decelerations are in general synonymous with umbilical cord compression and anything that results in the interruption of blood flow within the umbilical cord. [7, 8]In our study, 489 patients who were in spontaneous labour at

term,429 had reassuring admission trace. 60 patients had abnormal admission traces that is an incidence of 12.2% abnormal traces in patients with spontaneous onset of labour at term.

Out of these 60 abnormal admission traces, 36 had variable decelerations in admission test , among that 12 had atypical variable decelerations and 24 had typical variable decelerations. Thus incidence of variable decelerations in admission test was 7.3% among patients who had spontaneous labour at term, out of which 2.4% were atypical variable decelerations and 4.9%typical variable decelerations.Amongst 36 variable decelerations in admission test associated co-morbid conditions were present in 16 patients that is incidence of 44.4%. 5 patients had pre-eclampsia (31.2%), 2 had overt diabetes (12.5%) , 3 had Hypothyroidism (18.7%) and 6 had placental abnormalities such as low lying placenta (37.5%) . Patients with pre-eclampsia were 5, out of them 3 had atypical variable decelerations,. Remaining 20 of patients having variable decelerations in admission test have no associated comorbid condition (55.5%).Out of 36 patients variable decelerations in admission test , none of the patients had persistent variable decelerations during progression of labour .Out of 489 patients , 108 had foetal distress during labour 76 had meconium stained liquor without any decelerations and 72 had late deceleration all those patients had reassuring traces in admission test and none of them had variable decelerations in admission test.In 489 patients who had spontaneous labour at term, 360 underwent spontaneous vaginal delivery, incidence of that is 73.6 %, 9 (1.8%) underwent operative vaginal delivery and 120 (24.5%) caesarean section. Among the 36 patients with variable deceleration in admission test , 31 had normal vaginal delivery (86.1%), 5 had operative vaginal delivery (13.9%) and none of the patient underwent a caeserian section .Among the patients with variable decelerations in admission test incidence of operative interference was much less compared to that in patients with reassuring traces in admission test in spontaneous labour as same as compared with Meis et al.In 36 patients with variable decelerations in admission test , babies having APGAR less than 7 at 1 minute were 8(22.2%). Out of the 24 patients with atypical variable decelerations 3 had APGAR less than 7 at 1 minute (12.5%). Out of the 12 patients with typical variable decelerations 5 had APGAR less than 7 at 1 minute (41.6%). APGAR less than 7 at 5 minutes was seen in 3 (8.3%) babies who later went to NICU, 1(8.3%) had typical variable deceleration and 2(8.3%) had atypical variable decelerations

Out of these 36 variable decelerations , 3 babies had APGAR less than 7 at 5min shifted to NICU . 2 babies had cord around neck with atypical decelerations and 1 had a true knot had typical deceleration .The incidence of cord around neck and true knot among patients with variable decelerations in admission test with spontaneous onset of labour at term was 9.5% and 4.7% respectively . Out of 429 reassuring traces in admission test ,15 babies had cord around neck and 1 had a true knot had APGAR less than 7at 5min shifted to NICU .The incidence of cord around neck and true knot among patients with reassuring traces with spontaneous onset of labour at term was 3.5% and <1% respectively.1ncidence of NICU admissions are more in reassuaring traces in admission test compared to variable decelerations in admission test . Similarly study by Meis et al , showed no association existed between variable deceleration and FHR deceleration during labour, low APGAR score at birth or birth weight

CONCLUSION

- In our study there were no patients ended up in caeseran section because of fetal compromise as a consequence of variable deceleration in admission test. Among 9 patients ended up in operative vaginal delivery the indication for obstetric intervention was not variable deceleration, all had prolonged second stage of labour.
- To conclude our study variable deceleration in admission test with an incidence of 7.3% , did not contribute to obstetrical intervention in labour or poor neonatal outcome following delivery.

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