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Original Research Article

Fetomaternal outcome in patients of decreased fetal movements after thirty-four weeks of gestation

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ABSTRACT

Background: Maternal perception of decreased fetal movements is a cause of concern and common reason for visits to the antenatal clinic or delivery room. Several studies have shown that a reduction or cessation of fetal movements may result in poor pregnancy outcome and magnified increased risks of serious perinatal morbidity and mortality. Aim and objectives were to determine the correlation between decreased daily fetal movement counts, NST, USG and Colour Doppler with maternal and fetal outcome.

Methods: This study was a prospective observational study, conducted in department of obstetrics and gynecology at Surat municipal institute medical education and research medical college from January 2020 to June 2021.

Results: The study group consisted of 83 patients between 34 to 40 weeks of gestation with Decreased fetal movements. 60.24% patients belonged to age group between 21-25 years. 60.22% patients were multigravida. 87.95% patients were full term, 59.09% patients presented between 12-24 hours of duration with complain of decreased fetal movements. In view of NST results, 72.29% patients had reactive-NST. In ultrasonography, 27.10% had AFI <5 cm and 72.90% had AFI >5 cm & all patients had normal color Doppler study. 60 patients had induced labor. 68.67% patients delivered vaginally. 42.10% of vaginal deliveries, 80% of Instrumental vaginal deliveries and 75% of LSCS had Meconium-stained liquor. 81.92% babies had APGAR score of >7 at birth. 84.33% had birth weight more than 2.5 kg 68.18% babies were admitted in NICU due to Meconium aspiration syndrome, followed by respiratory distress syndrome in 18.18% and birth asphyxia in 13.63% babies.

Conclusions: Decreased fetal movement is a frequently occurring antenatal presentation, associated with poor perinatal outcomes. Daily fetal movement counts are very effective, cheap and reliable method to diagnose fetal compromise early. Methods like NST, USG and Colour Doppler study are helpful in the identification of causes and timely management of the patient with decreased fetal movements and helpful to diagnose the fetus at risk and their timely delivery.

Keywords: Fetomaternal outcomes, Fetal movements, Gestation

INTRODUCTION

Maternal perception of decreased fetal movements is a cause of concern and common reason for visits to the antenatal clinic or delivery room. Several studies have

shown that a reduction or cessation of Fetal Movements (FM) may result in poor pregnancy outcome and magnified increased risks of serious perinatal morbidity and mortality.¹ Fetal movement (FM) counting by pregnant women has long been suggested as a screening tool to identify impaired placental function.² The rationale

is that a fetus will respond to reduced uteroplacental blood flow and fetal hypoxia by decreasing gross fetal movements. Decreased fetal movement (DFM) is associated with placental pathologies and a range of adverse pregnancy outcomes, including fetal growth restriction and death.³ If DFM is recognized early and managed appropriately, adverse outcomes may thus be prevented. Maternal counting of fetal movement is an easy, inexpensive and valuable screening tool for fetal well-being that increases maternal-fetal bonding. A sudden change or decreased fetal movements is a potential important symptom which may precede stillbirth (RCOG, 2011). There are many methods to assess decreased fetal movements but daily fetal movement counts (DFMC) is an effective and reliable method to assess fetal wellbeing.^{4,5} Ultrasound assessment and color Doppler study should be considered in any woman presenting with DFM with an abnormal CTG⁸, persistent maternal perception of DFM, or if there is suspected IUGR.^{6,7}

Aims and objectives

Aim and objectives were to determine the correlation between decreased daily fetal movement counts, NST, USG and Colour Doppler, to determine the maternal outcome and to determine the fetal outcome.

METHODS

Study design, location and duration

Current study is prospective observational study. The study was conducted in department of Obstetrics and Gynecology at Surat Municipal Institute Medical Education and Research Medical College for a period of 18 Months (January 2020 to June 2021).

Study population and sample size

Total 83 pregnant women who were admitted and who fulfilled selection criteria were randomly selected

Inclusion and exclusion criteria

Pregnant women with Gestational age more than 34 weeks with complain of decreased fetal movement with Singleton pregnancy, who will give consent for it were included. Pregnancy less than 34 weeks of gestation, Diagnosed IUFD or congenital malformation or Women with multiple pregnancies or Patients who refuse to give consent were excluded.

Procedure

A detailed history of the pregnant women included in the study was taken. Thorough clinical examination including recording of vital parameters, systemic and obstetric examination, daily fetal movement count were carried out on admission. All preliminary investigations including ultrasound were done. The patients were evaluated by NST

recording for 20 mins, followed by amniotic fluid index measurement using four quadrant technique via ultrasonography and Color Doppler study.^{9,10} The test was initiated at or beyond 34 weeks of gestational age. The test was repeated weekly or bi-weekly depending on the findings of the previous tests and the risk factors and fetal movements perceived by patient.¹⁰ Patient's management was decided according to her gestational age, other risk factors, MBPP and color Doppler results. End points to assess outcome of pregnancy: oligohydramnios meconium-stained liquor APGAR score <7 was considered as abnormal, NICU admission, perinatal morbidity.

Statistical analysis

Statistical analysis was done using Chi square test and descriptive statistics.

RESULTS

During the study period from January 2020 to June 2021, total 83 patients were recruited in the study. 50 (60.24%) belonged to age group of 26-30 years of age.

Table 1: Demographic profile of the patient (n=83).

Range	N	%
Age (years)		
18-20	4	4.81
21-25	50	60.24
26-30	27	32.53
31-35	2	42.4
Gravida distribution		
Primi	33	39.75
Second	32	38.55
Third	14	16.86
Fourth or more	4	4.81
Gestational age (weeks)		
34-36	1	1.2
36-38	9	10.84
38-40	73	87.97

Table 2: Duration of complain and various test (n=83).

Range	N	%
Duration of decreased fetal movement in hours		
<12	24	28.91
12-24	49	59.04
>24	10	12.05
NST result		
Reactive	60	72.29
Non-reactive	23	27.71
USG (AFI in cm)		
<5	20	24.10
5-8	38	45.78
>8	25	30.12

Total 33 (39.75%) pts were primiparous and 50 (60.24%) were multiparous. 73 (87.95%) had more than 38 weeks of

gestation and 10 (12.04%) were between 34 to 38 weeks of gestation (Table 1).

Table 3: Maternal parameters.

Mode of delivery				
Parameters	N	%		
Vaginal	57	68.67		
Instrumental	10	12.04		
LSCS	16	19.27		
Comparison of maternal outcome				
DFMC	AFI	Colour Doppler	Vaginal delivery (N=67)	LSCS (N=16)
5.67/10	<5 cm (20)	Normal	13	7
6.28/10	>5 cm (63)	Normal	54	9

Total 24 (28.91%) patients presented within 12 hours with complain of decreased fetal movement, 60 (72.29%) had a reactive NST. 20 (24.10%) pts had AFI less than 5 cm. All patients had a normal color doppler study (Table 2). Out of 83 patients, 73 were full term. 57 (68.67%) terminated immediately due to oligohydramnios and 16 were allowed to go for spontaneous labor. 10 patients with preterm gestation and adequate liquor were followed with weekly NST. 57 (68.67%) delivered vaginally, 10 (12.04%) by instrumentation and 16 (19.27%) undergone LSCS. Out of 20 pts with AFI less than 5 cm, 13 (19.40%) had vaginal delivery and 7 (43.75%) undergone LSCS. Out of the rest 63 pts with normal AFI, 54 (80.59%) delivered vaginally and 9 (56.25%) undergone LSCS (Table 3). 70 babies weigh more than 2.5 kg and 13 between 1.5-2.5 kg 68 had an APGAR score of more than 7 and 15 less than 7 at the time of the birth. 22 babies were admitted in NICU with no intrapartum or perinatal mortality (Table 4). All babies were discharged.

Table 4: Fetal parameters (n=83).

APGAR score		
Parameters	N	%
<7	15	18.08
>7	68	81.92
Birth weight (Kg)		
<1.5	0	0
1.5-2.5	13	15.66
>2.5	70	84.33
NICU admission		
Yes	22	26.5
No	61	73.5

DISCUSSION

DFMC is one of the important indicators of fetal wellbeing. Timely intervention in a pt with decreased fetal movement can diagnose a jeopardized fetus and save the life of the fetus. Most of the patients in our study were between 21-30 years. This study was consistent with the findings, done by Miller et al with 57.26%, Eden et al with 62.07% and Sowmya et al with 62.86%.^{11,12} In present

study, most of patients were primiparous with gestation between 38-40 weeks of gestation (87.95%). Studies done by Miller et al had 78.89 %, McCarthy et al with 40%, Poojari et al with 46.67% of patients presented with decreased fetal movements at full term gestation.¹¹⁻¹³ In our study also 87.95% patients were between 38-40 weeks of gestation. In Present study, patients were having different duration of decreased fetal movements. Out of 83, 59 patients presented with complain of decreased fetal movements for more than 12 hour and 24 patients presented with complain of decreased fetal movements for less than 12 hours. Mean duration of decreased fetal movement duration in this study was 22.11 hours (11.61, 32.61). In the present study, the NST was reactive in 60 (72.29%) cases while it was non-reactive in 23 (27.71 %) cases. Studies done by Miller et al had 78.2% cases with reactive NST, Eden et al had 84.29% cases with reactive NST, which are comparable to our study with 72.56% cases having reactive NST.^{4,11} The amniotic fluid index was >5 cm in 63(75.9%) patients and less than 5 cm in 20 (24.10%) cases. Other studies done by Miller et al had 13.9% cases with AFI<5 cm, Eden et al suggestive of 12.6% cases with AFI<5 cm, Vidyashree et al had 7.14% with AFI<5 cm, McCarthy et al had 17.3% with AFI <5 cm and Sowmya et al had 8.56% cases with AFI<5 cm.^{4,11,12} All patients presented with decreased fetal movements with decreased liquor underwent USG color Doppler study to rule out fetal growth restriction. All color Doppler studies suggestive of normal fetoplacental and uteroplacental circulation. In present study, there were 20 (24.10%) patients with AFI <5cm whose mean daily fetal movement count were 5.67/10. Among these patients 13 (19.40%) delivered vaginally and 7 (43.75%) underwent LSCS for obstetrics indications. 63 (75.90%) patients had AFI >5cm with mean daily fetal movement count of 6.28/10. Among these patients 54 (80.59%) delivered vaginally and 9 (56.25%) underwent LSCS for obstetrics indications. In our study, out of 83 patients, 67 (80.73%) had vaginal delivery and 16 (19.27%) underwent Lower segment cesarean section for various indications like 8 (50%) had Meconium-stained liquor with non-reassuring NST, fetal distress in 3 (18.75%) patients, 3 (18.75%) had severe oligohydramnios with Non-reassuring NST and induction failure in 2 (12.5%) patients. Saastad et al and

Jessica et al had highest vaginal deliveries, 94.3% and 84% respectively in their studies^{1,12,14} On other hand McCarthy had 67.4% vaginal deliveries. Our study had 80.73% vaginal deliveries, which was similar to studies done by Turner et al and Winje et al.¹³⁻¹⁵

Studies done by Saastad et al had 6.6% LSCS rate, where McCarthy et al and Winje et al had LSCS rates 32.6% and 24.1% respectively. In present study, LSCS rate was 19.27% which was similar to McCarthy et al and Winje et al.¹²⁻¹⁵ In present study, out of 83 babies, 73.49% were healthy and kept in room air and early breastfeeding was promoted. 26.5% babies admitted in NICU for various indications like respiratory distress syndrome, birth asphyxia, Meconium aspiration syndrome etc. 8.9% had preterm birth. 18.08% had APGAR score <7 at birth. Winje et al had 50% babies with APGAR score >7 at birth and in present study 73.49%.¹³ In present study, 18.08% babies were with APGAR score <7 at birth and 26.5% babies were admitted in NICU which was similar to results seen in McCarthy et al where 18% babies were with APGAR score <7 at birth and 18% babies were admitted in NICU.¹³ There were 8.9% preterm births in our study, which was comparable to studies done by Brita et al and Turner et al where preterm birth rates were 9% & 4.4% respectively. Stillbirth rates reported in 0.2% by Turner et al 1% by Winje et al 1.4% by McCarthy et al whereas in our study and the study done by Saastad et al had no stillbirths.

Strengths and limitations

Strengths were decreased fetal movement is a cheap maternal symptom, which can identify the fetus at risk, still in uncompromised state and with timely intervention can save life of fetus. Limitations were the number of patients included in this study was 83. To formulate a definitive protocol, further multicentric studies with larger samples should be conducted. Incidence of patients presented with decreased fetal movements in our setup could not be found. As majority of the cases were beyond 38 weeks of gestational age only single time Daily fetal movements count, NST & USG performed, hence the effectiveness of DFMC for further continuation or termination was difficult in these limited number of cases.

CONCLUSION

Decreased fetal movement is a frequently occurring antenatal presentation, associated with poor perinatal outcomes. Daily fetal movement counts are very effective, cheap and reliable method to diagnose fetal compromise early. Methods like NST, USG and Colour Doppler study are helpful in the identification of causes and timely management of the patient with decreased fetal movements and helpful to diagnose the fetus at risk and their timely delivery. Pregnant women who consult antenatal clinic for decreased fetal movements as complaint should be taken seriously and they should be investigated promptly keeping the health of the fetus as the

primary priority. Maternal ability to detect important changes in fetal activity seemed to be improved by daily fetal movement count. There is early identification of fetus at risk and improved perinatal outcome, without causing more obstetric interventions. Due to early approach to the hospital and timely intervention, significant women with abnormal biophysical profile had good perinatal outcome.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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