Original Article

Importance of Amniotic Fluid Index

Examine the Importance of Amniotic Fluid Index (AFI) on Perinatal Outcome in Low Risk Term Pregnancy

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ABSTRACT

Objective: Examine the clinical importance of low amniotic fluid index (AFI) on perinatal outcome in low risk pregnancy at term.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynaecology, Sandeman Provincial Hospital Quetta from July 2018 to June 2019.

Materials and Methods: One hundred and twenty patients were included. They were categorized into two groups; GroupA females having low amniotic fluid index ≤5 cm with term pregnancy admitted in labour room for delivery and Group B females with AFI >5 cm were selected as a control. Demographic details were recorded after written consent. Outcomes were examined such as NST measure, mode of delivery, Apgar score at 5 minutes, need to NICU, low birth weight, meconium aspiration and respiratory distress.

Results: No significant difference observed between cases and controls regarding age of mother, non-stress test (NST) (reactive 81.67% vs 76.67%) and C-section delivery [30% vs 25%] (P>0.05). Significant difference was observed regarding Apgar score at 5 minutes <7 between both Groups (33.33% vs 8.33%) [P<0.05]. There was also a significant difference observed regarding need for admission to neonatal intensive care unit (8.33% vs 1.67), low birth weight (8.33% vs 1.67%) and meconium aspiration (11.67% vs 3.33%) between both groups (P<0.05). No perinatal death was recorded between cases and controls.

Conclusion: We found no significant difference regarding NST and mode of delivery among both groups. However, patients with low AFI had a high rate of neonatal complications as compared to patients with standard AFI >5 cm.

Key Words: Amniotic fluid index (AFI), Low risk pregnancy, Perinatal outcomes

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INTRODUCTION

Amniotic fluid index (AFI) is described as a semi quantitative ultrasound estimate used to indicate quantity of amniotic fluid.[1] As per indications by ultrasound examination, there is an increased risk of intra-partum fetal compromise in pregnant females with oligohydramnios.[2-5] High rate of pregnancy complications, neonatal morbidity and mortality is directly associated with oligohydramnios. Amniotic fluid index will be helpful to detect high risk cases, requiring increasing need of antepartum surveillance.[6]

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Females diagnosed with oligohydramnios have adverse perinatal outcomes such as low birth weight, fetal distress, neonatal mortality and high rate of morbidity. It is also associated with increased rate of C-section deliveries.[7,8] However, AFI is not a qualitative predictor of unfavorable outcomes and even the presence of any adverse outcome such as isolated term is still under questioned and not proving the AFI as a good predictor of perinatal and maternal outcomes.[9,10] The accurate pathophysiologic mechanism of oligohydramnios has not been identified, but during uterine contractions umbilical cord risk is one likely explanation. The present study was conducted aimed to examine the importance of amniotic fluid as a predictor of perinatal outcome in low risk term pregnancy..

MATERIALS AND METHODS

This prospective study was conducted at Department of Obstetrics & Gynaecology, Sandeman Provincial Hospital Quetta from 1st July 2018 to 30th June 2019. One hundred and twenty pregnant females were equally divided into two groups i.e. Group A (amniotic fluid index of ≤5 cm with low risk pregnancy at term) and

Group B (amniotic fluid index of ≥5 cm and ≤20 cm). Females with singleton, non anomalous pregnancy with intact membrane and term pregnancy were included. Females with previously perinatal loss, previous caesarean section, recurrent missed abortions, post term pregnancy, intrauterine growth restriction (IUGR) evidence, medical disorder which has effect on fetomaternal results e.g. hypertension, diabetes as well as cardiac disease were excluded. Non-stress test was done at the time of admission. Both group A and group B matched for parity, age, non anomalous conceptus, gestational age and intact membranes. The outcome measures were mode of delivery, meconium presence, NST measures, at five minutes Apgar score, neonatal unit admission and perinatal mortality. All the data was analyzed by SPSS 21. Student t' test was used to compare the findings. P-value <0.05 was set as significant..

RESULTS

From all the study patients, 25 (41.67%) patients Group A and 23 (38.33%) Group B (controls) were ages between 20 to 30 years, 27 (45%) Group A and 28 (46.67%) Group B patients were ages 31 to 40 years, 8 (13.33%) in Group A and 9 (15%) patients in Group B were ages 41 to 50 years. (P>0.05) found regarding age of mother between both groups (Table 1).

According to the non-stress test (NST), we found no significant difference (P>0.05) between cases and control (Table 2). According to the mode of delivery we found P>0.05 found between both groups (Table 3). Twenty (33.33%) patients in Group A had ≤7 Apgar score at five minutes and in Group B 5 (8.33%) patients had Apgar score >7 at five minutes and found significant difference among both groups [P<0.05] (Table 4).

Table No.1: Frequency of age in both groups

Age (years)	Group A	Group B
20 – 30	25 (41.67%)	23 (38.33%)
31- 40	27 (45%)	28 (46.67%)
40 – 50	8 (13.33%)	9 (15%)

P value ≥ 0.05

Table No.2: NST finding between both groups

NST	Group A	Group B
Reactive	49 (81.67%)	46 (76.67%)
Non reactive	2 (18.33%)	14 (23.33%)

P value ≥ 0.05

Group A had 5 (8.33%) and Group B had 1 (1.67%) neonates need admission to NICU. Meconium aspiration was found in 7 (11.67%) in Group A and 2 (3.33%) in Group B. Respiratory distress found in 3 (5%) neonates in Group A and 1 (1.67%) in Group B. In Group A 5 (8.33%) neonates had low birth weight while in Group B only 1 (1.67%) neonate had low birth weight. There was no neonatal mortality observed between both groups (Table 5)

Table No.3: Mode of delivery

Type of Delivery	Group A	Group B
Vaginal (Normal)	38 (63.33%)	40 (66.67%)
C-Section	18 (30%)	15 (25%)
Vaginal (Instrumental)	4 (6.67%)	5 (8.33%)

P value ≥ 0.05

Table No.4: APGAR score at five minutes

Score	Group A	Group B
≤ 7	20 (33.33%)	5 (8.33%)
≥ 7	40 (66.67)	55 (91.67)

P value < 0.05)

Table 5: Neonatal outcomes between both groups

Neonatal outcome	Group A	Group B
No complication	40 (66.67%)	55 (91.67%)
NICU Admission	5 (8.33%)	1 (1.67%)
Meconium aspiration	7 (11.67%)	2 (3.33%)
Respiratory Distress	3 (5%)	1 (1.67%)
Low birth weight	5 (8.33%)	1 (1.67%)
Mortality	-	-

P value <0.05.

DISCUSSION

In high risk pregnancies decreased amniotic fluid carries increased risk of intra-partum complications.[11] Conflicted views regarding perinatal outcome are expressed in different studies therefore the picture in low risk pregnancies is still not clear.[12,13]

In our study there was a significant difference observed regarding need for admission to NICU, low birth weight and meconium aspiration between both groups p-value <0.05. No perinatal death was recorded between cases and controls. These results were comparable to other studies in is usually result of cord compression in labour. They are most often seen during normal labour and in patients with low amniotic fluid index. Variable deceleration in female with low amniotic fluid index was observed in this study which is not statistically significant. In our study 25 (41.67%) patients in Group A and 23 (38.33%) in Group B (controls) were between 20 to 30 years of age, 27 (45%) and 28 (46.67%) patients were 31 to 40 years in Group A and Group B respectively, 8 (13.33%) in Group A and 9 (15%) patients in Group B were 41 to 50 years. Many studies showed similarity to our study in which the majority of patients were between 25 to 40 years.[14,15]

Variable deceleration identified on CTG group p-value >0.05. These results were different to the study by Bachhav et al[16] in which they reported significant difference between cases and controls regarding NST p

value <0.05. We found no significant difference between both groups p-value >0.05 regarding mode of delivery. These results were comparable to some other studies.[17,18] We also observed that 20 (33.33%) neonates born in Group A had ≤7 Apgar score at five minutes and in Group B 5 (8.33%) neonates had Apgar score >7 at five minutes P-value <0.05. Bachhav et al[16] showed similarity to our study results regarding Apgar score at five minute.

In the present study all the patients had received non-stress test NST at the time of admission and we found there was no significant difference between the study group and control which there was a significant difference observed in patients having low amniotic fluid than the patients with AFI >5 cm.[19,20] Some of the studies showed difference to our study results regarding neonatal complications in which no significant difference was observed between cases and controls.[21-23]**.**

CONCLUSION

We concluded from this study that there was no significant difference observed regarding NST and mode of delivery among cases and controls. However, patients with low amniotic fluid index had a high rate of neonatal complications such as admission to NICU, low birth weight, meconium aspiration and respiratory distress as compared to patients with AFI index >5 cm**..**

Author's Contribution:

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Final Approval of version:	Naila Ehasan Chauhan

Conflict of Interest: The study has no conflict of interest to declare by any author.

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