

FETO MATERNAL OUTCOME IN PREGNANCIES WITH AFI < 8 FROM 28 WEEKS OF GESTATION

R. Mercy Rodrigo¹, Arumugaselvi², R. Sumathi³

¹Associate Professor, Thoothukudi Medical College Hospital, Thoothukudi, India.

²Associate Professor, Thoothukudi Medical College Hospital, Thoothukudi, India.

³Assistant Professor, Thoothukudi Medical College Hospital, Thoothukudi, India.

Received : 17/10/2022
Received in revised form : 20/11/2022
Accepted : 03/12/2022

Keywords:
AFI, IUGR, oligohyramnios.

Corresponding Author:
Dr. R. Mercy Rodrigo
Email: mercyravi2003@gmail.com
ORCID: 0009-0004-7304-0473

DOI: 10.47009/jamp.2023.5.1.203

Source of Support: Nil,
Conflict of Interest: Nonedeclared

Int J Acad Med Pharm
2023; 5 (1); 976-980



Abstract

Background: Oligohydramnios has been correlated with increased risk of congenital anomalies, IUGR, birth asphyxia and low APGAR scores. Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity and mortality. Objective of the study was to determine the fetal and maternal outcome in pregnancies with AFI less than 8 from 28 weeks of gestation. **Materials and Methods:** Present study is a hospital-based study on perinatal outcome and maternal outcome in third trimester with AFI <8 and was carried out in Department of Obstetrics & Gynaecology, Government Thoothukudi Medical College Hospital, for a period of 1 year. Patinets were selected randomly after satisfying the inclusion and exclusion criteria. All required investigations were done. **Result:** High risk pregnancies identified in our study were GHT, anemia, post-dated, malpresentation & hypothyroid. Of those who had done fetal Doppler, nearly 40% had normal study and 10% had abnormal Doppler study with reduced diastolic flow/ absent flow/ reversed flow. In our study, Labour natural was high (51.3%) with LSCS rates (48.7%). Out of 73 cesarean sections, 38 (52%) was delivered due to fetal distress. AFI <5 has significant role in the APGAR of the new born at 5 minutes of life. It is found that nearly 42% of babies whose mother had AFI < 5 were born with APGAR <7 at 5 minutes of life. The NICU admission rate was high in them. Out of 150 mothers, 147 live births, 2 IUD, 1 still birth was noted. **Conclusion:** Whatever be the mode of delivery in a case of oligohydramnios, the fetal outcome is significantly affected in induced cases rather than spontaneous or uninduced cases. IUD and stillbirth has been recorded in PG induction cases. APGAR score had significant importance with gestational age and the associated labour complications. Oligohydramnios associated with IUGR carries a poor perinatal outcome.

INTRODUCTION

Oligohydramnios is defined as decrease in the amniotic fluid level below normal. (Normal level 8-15cm) It is associated with congenital anomalies and perinatal mortality. Oligohydramnios can result in subjective crowding of the fetus in utero.

Oligohydramnios can occur in 1-2% of pregnancies approximately.^[1,2] Borderline AFI or borderline oligohydramnios is controversial. AFI between 5-8 is called as borderline oligohydramnios by some.^[2,3,4]

Oligohydramnios is being noticed more often these days due to routinely performed obstetric USG and also most of the cases were spotted late due to poor AN follow up. Oligohydramnios is a major essential indicator in the prediction of poor perinatal outcome. It is accompanied with fetal heart rate

abnormalities, meconium staining of amniotic fluid, umbilical cord compression, poor tolerance of labour, low APGAR score, fetal acidosis.

MATERIALS AND METHODS

Present study is a hospital-based study on perinatal outcome and maternal outcome in third trimester with AFI <8 and was carried out in Department of Obstetrics & Gynecology, Government Thoothukudi Medical College Hospital, for a period of 1 year.

Inclusion Criteria

- Antenatal cases from 28 weeks of gestation diagnosed with AFI <8 cm with singleton pregnancy.

Exclusion Criteria

- Multiple gestation

- Fetal congenital anomalies
- Previous LSCS/ Myomectomy/ Hysterotomy PROM/ PPRM

Study was conducted to observe outcome of labour in form of perinatal morbidity/mortality and maternal outcome in form of vaginal or cesarean section. About 150 cases with AFI < 8 from 28 weeks of gestation onwards. History about the patient's age, obstetric code, gestational age, menstrual history, obstetric history, associated complications in present pregnancy were noted. Symphysis-fundal height was measured in centimeters. Fetal movements and fetal heart rates was recorded serially. Blood investigations – hemoglobin, blood grouping and typing, cell counts, blood sugar, urine analysis, HIV, VDRL, USG, Doppler, NST were done. Speculum and per vaginal examination was done to rule out draining per vaginum and confirmed intact membranes. After taking informed consent patients were treated. Iron, calcium, and multi vitamin supplements were continued orally as before. AFI measurements was done. These women were followed till discharge.

Decision of delivery by vaginal route or elective/emergency LSCS was done as required. Some patients were already in labour and others allowed to go into spontaneous labour. If delivery is made by caesarean section, the indication was recorded.

A pre designed study proforma was filled for each case.

The outcome measures were CTG changes, Mode of delivery, Presence of meconium, APGAR score at 5

minutes IUGR and NICU admissions, Need for CPAP or Ventilator support.

RESULTS

High risk mothers in this study noted were GHT (16 – 10.7%), GDM (4 – 2.7%), Anaemia (26 – 17.3%), Postdated (15- 10%), Malpresentation (8 – 5.3%), Hypothyroid (7 - 4.7%). Some of the mothers had 2 high risks complicating pregnancy, for eg., GHT with Anaemia, GHT with GDM on meal plan.

70% of the mothers were induced either by foley or gel (PGE2) or foley followed by gel (PGE2) or misoprostol (PGE1). Nearly 23.3% mothers went into spontaneous labour and very few (0.6%) were not induced due to abnormal presentation or any obstetric contraindications.

In study group, 48% had vaginal delivery and 45.3% had emergency LSCS delivery with 0.03% having elective LSCS. Outlet forceps was conducted in 0.02% and assisted breech delivery was conducted in only 1 mother which is 0.006%

The rate of caesarean section for fetal distress was higher in study group (52%) when compared with other indications for LSCS. The difference was found to be significant. (p - <0.05). Next common indication was CPD in labour (13.6%) which is followed by malpresentation and failed induction each contributing 10.9%

Maternal surgical site infection was noted in 3 individuals (2%). Prolonged hospital stay in mothers either during antenatal or postnatal period was noted in 52 mothers (34.67%).

Table 1: Mothers with High Risk Factor

| HIGH RISK | No of mothers | Percentage |
|-----------------|---------------|------------|
| GHT | 16 | 10.7% |
| GDM | 4 | 2.7% |
| Anemia | 26 | 17.3% |
| Malpresentation | 8 | 5.3% |
| Post dated | 15 | 10% |
| Hypothyroid | 7 | 4.7% |

Gestational age has a contributory effect on the perinatal outcome of the fetuses. Hence gestational age of mothers at diagnosis and gestational age at delivery were documented. The chart below shows the number of mothers in each gestational age along with their recorded AFI values.

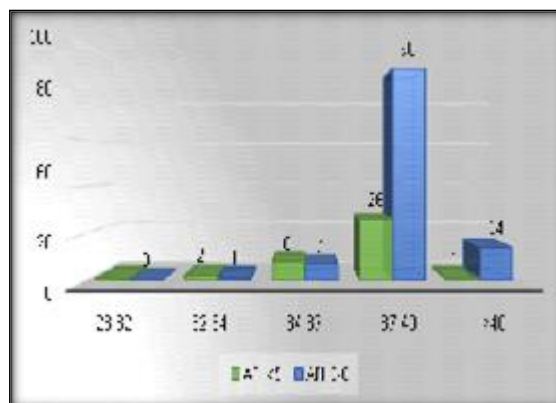


Figure 1: Distribution of Cases in Different Gestational Age Groups

Table 2: AFI 5-8 with neonatal outcome with respect to mode of delivery

| MODE OF DELIVERY | NEONATAL OUTCOME (n = 38) | | | P- VALUE |
|-----------------------|---------------------------|-----------------------|---------------------|----------|
| | LIVE BIRTH n(%) | IUD/STILL BIRTH n (%) | EXPIRED LATER n (%) | |
| Labour natural | 11 (28.9%) | 1 (2.6%) | 0 | <0.0001 |
| Emerg LSCS | 21(55.2%) | 0 | 1 (2.6%) | |
| Elective Iscs | 3 (7.9%) | 0 | 1 (2.6%) | |
| Instrumental delivery | 0 | 0 | 0 | |

Table 3: AFI <5 with neonatal outcome with respect to mode of delivery

| MODE OF DELIVERY | NEONATAL OUTCOME (n = 38) | | | P- VALUE |
|-----------------------|---------------------------|-----------------------|---------------------|----------|
| | LIVE BIRTH n(%) | IUD/STILL BIRTH n (%) | EXPIRED LATER n (%) | |
| Labour natural | 59 (52.7%) | 1 (0.9%) | 0 | <0.0001 |
| Emerg LSCS | 43 (38.4%) | 1 (0.9%) | 2 (1.78%) | |
| Elective Iscs | 1 (0.9%) | 0 | 0 | |
| Instrumental delivery | 4 (3.6%) | 0 | 0 | |
| Assisted breech | 1 (0.9%) | 0 | 0 | |

The tables above give an idea about the mode of delivery and neonatal outcomes in group with AFI<5 and AFI 5-8.

Neonatal death rate was 5.2% in AFI <5 and as 1.75% in AFI 5 to 8 group. Neonatal death rate was 3.7% in nonreactive NST and 2.08% in reactive NST. 1 IUD and 2 neonatal deaths were found in AFI <5 group where as 1 IUD, 1 still birth and 2 neonatal deaths were found in AFI 5 to 8 group. The perinatal mortality rate was 7.8% in AFI < 5 group & 3.5% in AFI 5 to 8 group. The overall perinatal mortality rate in this study was found as 4.86%.

Live birth rate was found to be 98% with one still birth (0.006%) and 2 IUDs during treatment (0.01%). Meconium stained liquor in study group was 37.7% and clear liquor was noted 63.3%.

APGAR score <7 at 5 mins was 22% in study group and IUGR fetus was found to be 30%. 47.3% of the live born babies needed NICU admission.

Babies weighing less than 2 kg were 8% & it was 37% with babies weighing between 2 to 2.5 kg. LBW babies and associated IUGR was noted in almost 45% mothers belonging to the AFI <5 group and the same level of association (17%) was not found in AFI 5 to 8 group. P value is <0.05 and this is significant.

IUD rate was found as 2.6% in AFI <5, where as it was 1.7% in AFI 5 to 8.

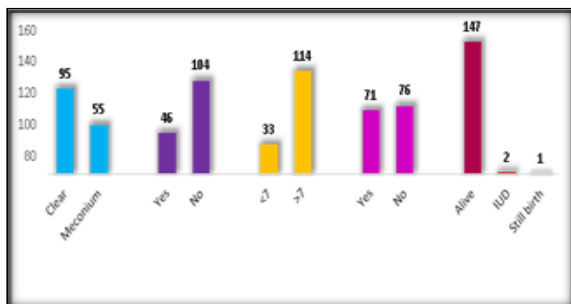


Figure 2: Perinatal outcome

Table 4: Perinatal Outcome in Relation to Gestational Age

| GA ATADMISSION | BIRTHSTATUS | | |
|----------------|-------------|------------|-----|
| | LIVEBIRTH | STILLBIRTH | IUD |
| 28-37 | 16 | 1 | 2 |
| 37-40 | 116 | 0 | 0 |
| >40 | 15 | 0 | 0 |

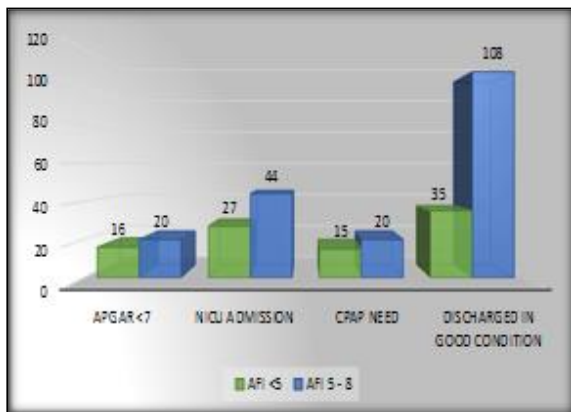


Figure 3: Perinatal Outcome in AFI <5 And AFI 5-8 Group

Almost half of the study population did not undergo Doppler study as they were found to be oligohydramnios at the time of admission and they were proceeded with induction. In the remaining 50% who underwent fetal Doppler, 38.7% presented with normal study, 6.7% showed reduced diastolic flow, 2% showed AEDF and 2.7% had REDF.

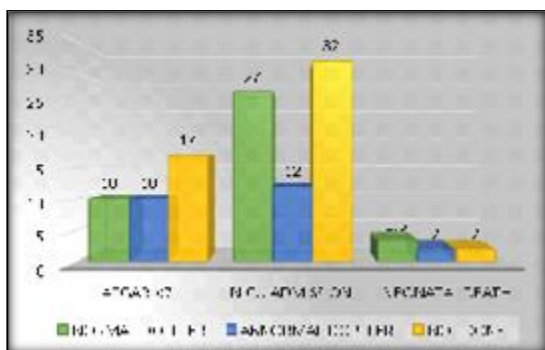


Figure 4: Perinatal Outcome in Relation To Doppler Abnormalities

DISCUSSION

Oligohydramnios with AFI <8 can lead to an increase in avoidable perinatal mortality and morbidity in the form of iatrogenic preterm labour, low birth weight, IUGR, low APGAR scores, NICU admissions, fetal hypoxia and its sequelae, RDS, NEC & HIE. Maternal morbidity is also on the rise resulting in operative morbidity, anaesthetic complications, blood loss, post operative period complications due to wound infection, urinary retention, complications due to delayed ambulation, prolonged hospital stay and long term consequences in future pregnancy like scar rupture, mandatory repeat LSCS, placenta previa, pelvic and extensive intra abdominal adhesions, etc.

Casey & coworkers (2001) conducted a study on pregnancy outcome after diagnosis of oligohydramnios, and found that there was an increase in induction of labour (42% over 18%), non reassuring fetal heart rate patterns (48% vs 39%), NICU admission (7% over 2%), MSAF (1% over

0.1%), neonatal death rate (5% over 0.3%) associated with oligohydramnios.¹

Chamberlain & coworkers 1993, found there was a significance between incidence of congenital anomaly, IUGR related to amniotic fluid volume.⁵ Youseef et al 1993 conducted a study on measurement of AFI and fetal outcome and found AFI more than 5cm had better chance of predicting a good fetal outcome.

Golan & coworkers (1994) assessed fetal outcome in 145 babies with oligohydramnios and found increased incidence of fetal distress, MSAF (29%), IUGR (24.5%), breech (17%), birth asphyxia (11.5%).

Chauhan S P & coworkers (1999) found increased risk of caesarean delivery with antepartum and intrapartum AFI 5cm, due to fetal distress and such babies had low APGAR score at 5 mins. Baron and coworkers (2000) found that oligohydramnios resulting in caesarean section due to fetal distress was studied and found to have sensitivity of 78%, specificity of 74%, positive predictive value of 33%, negative predictive value of 95.6. Locatelli A 2004 suggested that oligohydramnios was associated with high risk of low birth weight in postdated pregnancies.

In this study comprising 150 mothers, 57 high risk mother were identified. AFI <5 group had 47.4% high risk mothers and AFI 5 to 8 group had 34.8% high risk mothers. Of the 93 low risk mothers, AFI <5 group had 52.6% low risk mothers and AFI between 5 to 8 group had 65.2% low risk mothers. Out of 38 mothers with AFI <5, the rate of LSCS comes around 68% and LN accounts for 32%. In this study, it is noted that AFI <5 has significant role in the APGAR of the new born at 5 minutes of life. It is found that nearly 42% of babies whose mother had AFI < 5 were born with APGAR <7 at 5 minutes of life.

The NICU admission rate is high in oligohydramnios complicating pregnancy. In both groups, the rate is high with AFI <5 group having slightly higher rates of 70% compared to 40% in AFI 5 to 8 group. IUD/still birth rates and the perinatal mortality rate were almost equal in both groups which is high when compared with uncomplicated pregnancies.

Low birth weight babies (< 2 kg) were found to be in high numbers (63%) in the AFI <5 group when compared with AFI 5 to 8 group where the LBW babies comprised 22.5%.

The proportion of IUGR babies with respect to their gestational age in the AFI < 5 group was 58% as compared to 21% in those with AFI 5 to 8.

As the p-value is <0.002, this study shows gross association of oligohydramnios particularly AFI <5 having an impact on the birth weight, APGAR & baby being born IUGR.

The gestational age at the time of study varied in the mothers because of the difference in the visit of the mothers to the hospital, their less frequent AN check ups. Most were caught in the term (77.3%) and only

a handful mothers (10.9%) were diagnosed early and treated accordingly. 10% mothers found to have oligohydramnios in the post 40weeks period. Of the 150 mothers, 25.3% had AFI <5 and the remaining 74.7% had AFI between 5 to 8. 92% had reactive CTG at the time of admission. Only 8% showed non-reactive CTG at the admission itself & 36% had non-reactive CTG during labour.

CONCLUSION

Oligohydramnios is associated with adverse perinatal outcome.⁷ Oligohydramnios with non reactive NST needs careful monitoring and eventuates in early delivery. It increases the incidence of caesarean delivery for fetal distress, NICU admission, low APGAR at 5 mins and Neonatal death. Oligohydramnios associated with IUGR carries a poor perinatal outcome (increased neonatal death, NICU admission, increased rate of CS for fetal distress, very low birth weight) Hence they need good neonatal care.

REFERENCES

1. Casey BM, Leveno KJ. Pregnancy outcomes after antepartum diagnosis of oligohydramnios at or beyond 34 weeks gestation. *American Journal of obstetrics and gynaecology*, 182: 9009, 2000
2. Loren N Petrozella et al. *Obstetric Gynecol.* 2011 Feb;117(2 Pt 1):338-42.
3. Baron C, Morgan MA, Garite TJ. The impact of amniotic fluid volume assessed intrapartum on perinatal outcome. *American Journal of Obstetrics and Gynecology*, 1995, 173: 1667
4. Magann EF, Chauhan SP, Hitt WC, et al. Borderline or marginal amniotic fluid index and peri partum outcomes : a review of the literature. *J Ultrasound Med* 2011; 30:523
5. Chamberlain PF, Manning FA, Morrison I et al. Ultrasound evaluation of amniotic fluid volume. The relationship of marginal and decreased amniotic fluid volume to perinatal outcome. *American Journal of obstetrics and gynecology*, 1984, 150: 245-249
6. Baron C, Morgan MA, Garite TJ. The impact of amniotic fluid volume assessed intrapartum on perinatal outcome. *American Journal of Obstetrics and Gynecology*, 1995, 173: 1667
7. Gary Cunningham F, Kenneth J Leveno , Steven L Bloom, John C Hauth, Dwight J Rouse, Catherine Y Spong, editors. *Williams Obstetrics. 25th Edition. The McGraw - Hill Companies;2010. ISBN 978-0-07-149701-5.*