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Research Article

Perinatal Outcome Of Term Pregnancies Complicated By Oligohydramnios

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Abstract:
Background: To study the perinatal outcome in Oligohydramnios (AFI < 5) at term & find out incidence of relation of maternal high risk factors.
Methods: A Prospective cohort study of 30 women diagnosed to be having Oligohydramnios on ultrasound at 37 weeks of pregnancy was conducted in an obstetric hospital situated in an urban area. The patients were enrolled in this study on the basis of predefined inclusion and exclusion criteria. Detailed history was taken in all the patients. General and systemic examination was done. Perinatal Outcome was studied in terms of birth asphyxia, presence of anomalies, need for admission to NICU and neonatal mortality. Odds ratio were calculated at appropriate associations. P < 0.05 was considered as significant. The data was tabulated and analyzed using SPSS 16.0 version software.
Results: Our study found that Oligohydramnios at term pregnancy was associated with increased incidence of nonreactive NST, meconium stained amniotic fluid, birth asphyxia, respiratory distress immediately after birth, congenital anomalies, need for admission to NICU and neonatal mortality.
Conclusions: Oligohydramnios diagnosed on ultrasound at or after term (37 weeks) is associated with adverse perinatal outcome. The possibility of congenital anomalies, birth asphyxia and need for NICU admission in immediate postnatal period makes it necessary that such patients be delivered at an appropriate centre having NICU facilities.

Keywords : Oligohydramnios, Obstetric Ultrasound, Congenital Anomalies, Neonatal Intensive Care.

Introduction:

Oligohydramnios is defined as either an amniotic fluid level index less than 5 cm or 5th percentile on ultrasound or single deepest pocket of less than 2 cms or amniotic fluid volume of less than 500 ml at 32- 36 weeks of gestation. These multiple definitions are compounded by the fact that there is no defined level at which intervention is recommended. The estimation of amniotic fluid volume is an integral part of assessment of near term and post term pregnancies. A decreasing amniotic fluid volume at term or in postmature pregnancy may indicate a need for induction of labour[1].

Since the major portion of amniotic fluid comes from the urine passed by the fetus any anomaly causing defective formation of urine is likely to be associated with Oligohydramnios. Fetal anomalies like renal agenesis, polycystic kidney disease, posterior urethral valves or vesicoureteric reflux therefore is likely to be associated with Oligohydramnios. Other causes of Oligohydramnios may include premature rupture of membranes, Placental insufficiency (secondary to PIH, Gestational diabetes and post maturity). Certain medications like ACE inhibitors, indomethacin and ibuprofen may cause Oligohydramnios. In some cases no obvious cause of Oligohydramnios can be detected and this type of Oligohydramnios is labeled as idiopathic[2].

The reduced amniotic fluid level can have profound effects on the wellbeing of the fetus. The severity of fetal affection depends upon the gestational age at which oligohydromnios occurs. Generally earlier oligohydramnios occurs more severe are the effects on the fetus. Oligohydromnios occurring in early or mid second trimester is associated with intrauterine deaths in majority of the cases (> 70 %). The mortality in these cases is usually due to associated congenital anomalies (urogenital anomalies), lung hypoplasia, fetal compression and amniotic band syndrome. The reduced amniotic fluid causes compression of fetus and limits the movements of diaphragm and abdomen causing fixation of chest wall. All these have an adverse effect on lung maturity leading to pulmonary hypoplasia[3].

Prolonged oligohydramnios may be associated with fetal acidosis, IUGR, meconium staining of amniotic fluid and umbilical cord compression. The diagnosis of oligohydramnios should prompt obstetrician to look for the

cause by appropriate tests. Premature rupture of membranes being one of the common causes of oligohydramnios near term should be ruled out by appropriate tests. Preeclampsia and gestational diabetes must be ruled out by blood pressure monitoring, albuminuria and blood sugar levels. Fetal urogenital anomalies like renal agenesis or polycystic kidney disease must be ruled out by antenatal scans. Serial Doppler ultrasounds must be done to diagnose compromised uteroplacental or placentofetal circulations. In selected patients transcervical instillation of isotonic sodium chloride solution may reduce the risk of cord compression, lung hypoplasia and fetal acidosis[4].

In patients with oligohydramnios is it critical to deliver the baby an appropriate time. Early deliveries are associated with prematurity, low birth weight and hyaline membrane disease while delay in induction may cause fetal compromise, meconium aspiration syndrome and fetal demise. The delivery should take place not only at an appropriate time (risk of prematurity vs risk of fetal demise) but also by appropriate methods (induction vs LSCS) and place (institutional deliveries where NICU facilities are available) [5].

Materials and Methods:

This prospective cohort study was conducted in the department of obstetrics and gynecology of a hospital situated in an urban area. All pregnant women who have been diagnosed with oligohydramnios on the basis of antenatal ultrasound at or beyond 37 weeks of gestation were included in this study depending upon inclusion and exclusion criteria. A detailed antenatal history was taken all the cases. General, systemic and obstetric examination was done in all the cases. Basic investigations like complete blood count, HBsAg, ELISA and blood grouping was done in all the cases. Ultrasound examination and obstetrics doppler was done in all the cases. Patients were followed up till the time of delivery. Mode of delivery was documented. Perinatal outcome in terms of any adverse effect on fetus or neonate was noted. A pediatrician has attended the neonate during delivery. A detailed neonatal examination was done by pediatrician to rule out or confirm presence of any congenital anomalies. APGAR score at 1 minute and 5 minutes was noted. Need for NICU admission and final outcome of newborn was documented. Appropriate statistical methods were used to study the statistical significance.

Inclusion Criteria:

1) Women diagnosed with oligohydramnios on antenatal ultrasound (AFI < 5).
2) At or after 37 completed weeks of gestation.
3) Agree to give informed consent to be part of study.

Exclusion Criteria:

1) Patients who refused to give consent.
2) Gestational age < 37 weeks.
3) Severe coexisting maternal morbidities likely to have adverse effect on perinatal outcome.

Results:

Out of 30 patients diagnosed with oligohydramnios at or beyond 30 weeks of gestation 22 (73.33 %) patients were between 37 weeks to 42 weeks of gestation and remaining 8 (26.66 %) patients were having gestational age of more than 42 weeks (postmature).

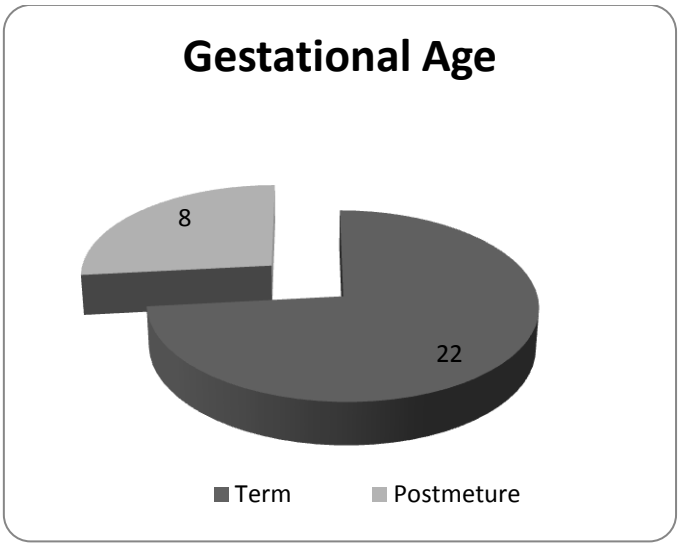

Figure 1: Gestational Age of the studied cases.

A non stress test was done in all patients. Non stress test was reactive in 18 patients (60%) and it was non reactive in 12 cases (40 %).

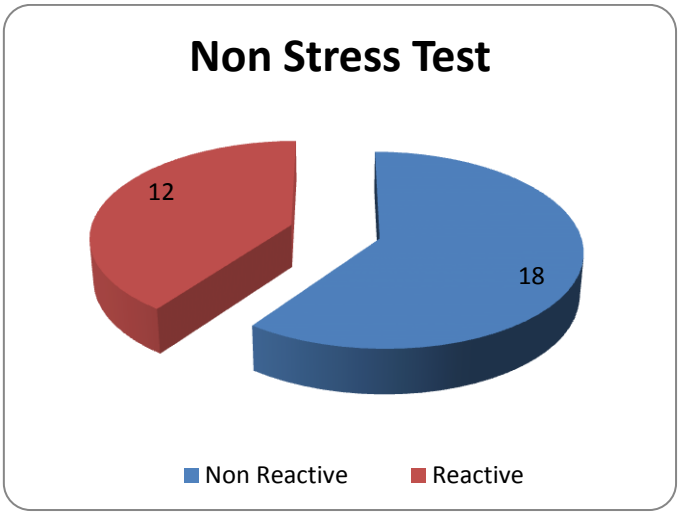

Figure 2: Non stress test in the studied cases

The analysis of mode of delivery revealed that out of 30 cases Normal vaginal delivery took place in 10 (33.33 %) patients while LSCS was done in 16 (53.33 %) patients. In remaining 4 (13.33 %) deliveries some instrumentation in the form of suction or forceps was used.

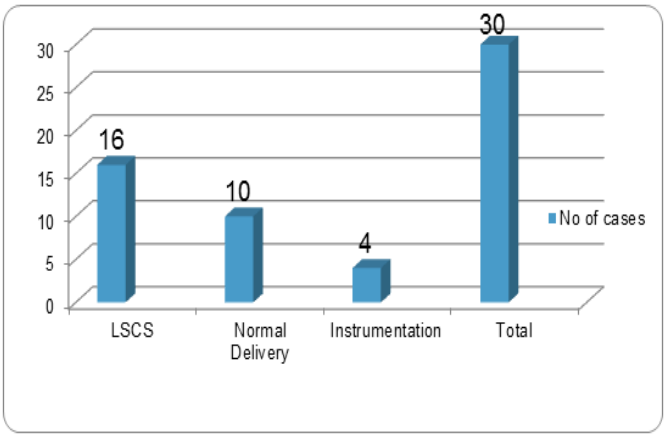

Figure 3: Mode of Delivery in the studied cases.

The analysis of neonates in respect to meconium stained amniotic fluid showed that meconium stained amniotic fluid was present in 14 patients (46.66 %) and absent in 16 patents (53.33 %).

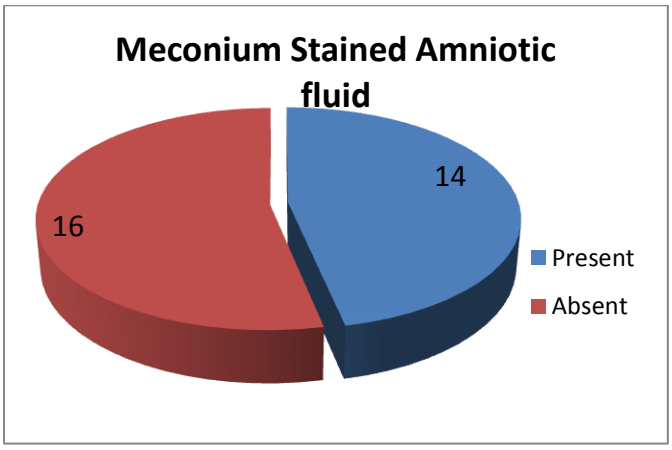

Figure 4: Meconium stained amniotic fluid in the studied cases.

APGAR score at 1 minute and 5 minutes in the studied cases showed that at 1 minute there were total 10 neonates who were having birth asphyxia. Out of these 10 babies 6 babies had APGAR score less than 7 suggestive of mild to moderate birth asphyxia while at 5 minutes APGAR was mild to moderate in 3 patients and severe in 2 patients.

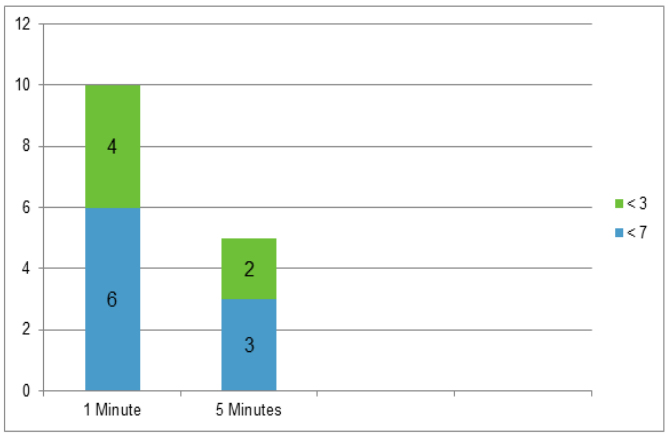

Figure 5: APGAR score at 1 minute and 5 minutes in the studied cases.

The analysis of birth weight of the studied cases showed that there were 10 (33.33%) babies in whom birth weight was normal (> 2.5 kg) while 20 babies were low birth weight out of which 16 babies were less than 2.5 kg and 4 babies were having birth weight less than 2 kg.

Finally an analysis of the perinatal outcome was done. It was found that out of 30 studied cases 15 (50%) neonates were admitted in NICU. The indications for admission in NICU included birth asphyxia (16.66 %), meconium aspiration (10 %), low birth weight babies (13.33), lung hypoplasia (6.66 %) and congenital anomaly (3.33 %) in the form of antenatally diagnosed posterior urethral valve.

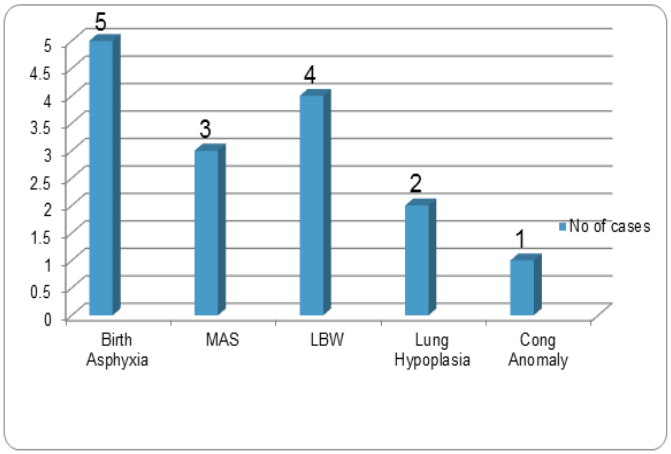

Figure 6: NICU admissions in babies born to mothers with oligohydramnios.

Out of 30 studied cases 15 needed NICU admission for various reasons like respiratory distress, meconium aspiration, lung hypoplasia and birth asphyxia. Out of these 15 patients 5 (16.66 %) expired during the course of treatment in NICU. The cause of deaths included birth asphyxia (6.66 %), Lung hypoplasia (3.33 %), meconium aspiration (3.33 %) and sepsis (3.33 %).

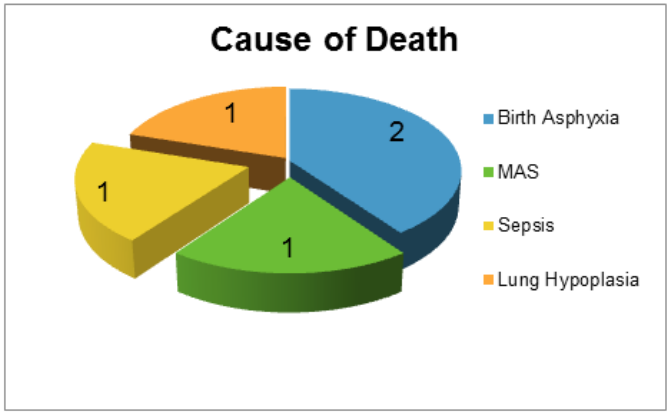

Figure 7: Causes of Neonatal Mortality in babies born to mothers with oligohydramnios.

Discussion:

This was a prospective cohort study of 30 patients with oligohydramnios at or after 37 weeks of gestation admitted to our hospital. Out of the 30 studied cases 22 cases were in between 37-42 weeks of gestation and 8 patients were beyond 42 weeks of gestation (post maturity). After 37 weeks usually

there is decrease in amniotic fluid volume and as the pregnancy advances there is increased incidence of oligohydramnios. Many studies have confirmed that maximum amniotic fluid level is seen between 34 to 37 weeks after it starts declining and increased gestational age is associated with an increased risk of oligohydramnios. Serial amniotic volume estimation by ultrasound shows that there is a gradual decline in amniotic fluid volume beyond 37 weeks of gestation6. Queenan JT, et al performed One hundred and eighty-seven amniotic fluid determinations on 115 patients from 15 to 42 weeks' gestation. The authors found that the mean volume rises from 239 ml. at 15 to 16 weeks to 669 ml. at 25 to 26 weeks and 984 ml. at 33 to 34 weeks; it then decreases slightly to 836 ml. at term and 544 ml. at 41 to 42 weeks[6].

In our study 18 patients had reactive and 12 patients had non reactive non stress test. Similar effects of oligohydramnios were reported by Harding JA et al who in their study showed that increased incidence of variable decelerations and nonreactive nonstress tests was associated with a significantly lower overall average daily amniotic fluid index. Oligohydramnios especially in early pregnancy is known to cause adverse effects on fetal well being manifesting as nonreactive non stress test. The authors concluded with recommendations that nonstress test should remain the mainstay in the management of oligohydramnios due to preterm premature rupture of membranes[7].

Oligohydramnios is commonly associated with the risk of birth asphyxia. Lower APGAR scores at 1 minute and 5 minutes were noted in 10 and 5 patients respectively. In our study mild to moderate birth asphyxia (APGAR 3-7) was seen in 6 neonates while severe birth asphyxia (APGAR < 3) was seen in 4 neonates at 1 minute. Estimation of APGAR score at 5 minutes showed mild to moderate birth asphyxia in 3 patients (APGAR 3-7) and severe birth asphyxia in 2 patients (APGAR < 3). Similar findings were seen in study conducted by Golan A et al who in the study of One hundred and forty-five cases of oligohydramnios in the second and third trimester showed that 11.5 % of these neonates suffered from some or the other degree of birth asphyxia. The authors concluded that oligohydramnios is associated with a higher rate of pregnancy complications and increased fetal morbidity and mortality. The authors further recommended induction of labour once pulmonary maturity is present or in cases of fetal distress[8].

In our study 20 neonates were found to be low birth weight. Out of these 20 neonates 16 babies were less than 2.5 kg and 4 babies were less than 2 kg. The cause of low birth in these neonates may include iatrogenic induction of labour, IUGR babies and placentofetal compromise. There are many studies which have found a strong correlation between oligohydramnios and low birth weight. Morris RK et al in their study of 244,493 fetuses found that oligohydramnios was strongly associated with being small for gestational age and mortality. Similar inferences were drawn from the studies conducted by Naveiro-Fuentes M et al[9].

In our study 15 neonates required NICU admissions. Various neonatal problems for which they were admitted included birth asphyxia, Meconium aspiration syndrome, lung hypoplasia and low birth weight. 1 patient was admitted secondary to antenatally detected posterior ureteral valve (PUV). In addition to PUV the neonate also had severe respiratory distress secondary to birth asphyxia. Similar NICU admission rates were reported in the study conducted by Bachhav AA et al who in their study of 180 pregnant women at term with no known obstetric or medical complications with an AFI ≤ 5th percentile showed that NICU admissions were required for perinatal morbidities like APGAR <7, seizures, hypoglycemia, hypothermia, hyperbilirubinemia, hypocalcemia, meconium aspiration and respiratory distress[10].

Conclusion: Oligohydramnios is associated with increased maternal as well as neonatal morbidity. In neonates born to these women a thorough clinical examination should be done to rule out urogenital anomalies. Moreover the deliveries should be conducted at a centre which has NICU care facilities.

Conflict Of Interest: None

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