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Research Paper

Fetomaternal Outcome in Cases of Oligohydramnios – A Prospective Observational Study

Medical Science

KEYWORDS : Oligohydramnios, AFI, IUGR

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ABSTRACT

Objective- Aim of the current study was to study the perinatal outcome in pregnancies with oligohydramnios and the association between oligohydramnios and other adverse pregnancy conditions.

Method- A prospective observational study was conducted on 150 pregnant women diagnosed with oligohydramnios in a tertiary care hospital. Amniotic fluid index of less than 8 cm and gestational age of more than or equal to 28 weeks were taken as inclusion criteria. For the purpose of analysis, the patients were further divided into two groups- Group I with severe oligohydramnios AFI < or equal to 5 and group II ie with borderline oligohydramnios with AFI between 5 and 8.

Result- The incidence of associated maternal and fetal complications were higher in women with severe oligohydramnios as compared to those with borderline oligohydramnios.

Conclusion- The risk of adverse perinatal outcome increases with increasing severity of oligohydramnios. The earlier in pregnancy that oligohydramnios develops, the poorer is the prognosis.

Introduction-

Amniotic fluid provides a protected milieu for the growing fetus, cushioning the fetus against mechanical and biological injury, supplying nutrients, and facilitating growth and movement. (1). Amniotic fluid volume is a chronic marker of fetal well-being. Abnormalities of the amniotic fluid volume may result from maternal or fetal conditions. The reported incidence of oligohydramnios varies between 0.5% to >5%, depending on the definition of oligohydramnios used and the population studied. (1). Oligohydramnios is significant because of its known association with adverse pregnancy outcome, such as umbilical cord occlusion, fetal distress in labour, meconium aspiration, operative deliveries, and stillbirth.(2). This study was conducted to find out the extent to which oligohydramnios affects the perinatal outcome, to identify those pregnancies which are truly at risk and require aggressive intrapartum surveillance to obtain an optimum perinatal outcome.

Material and Methods-

A prospective observational study was conducted on 150 pregnant women diagnosed with oligohydramnios in a tertiary care hospital. The duration of the study was one year. Amniotic fluid index of less than 8 cm and gestational age of more than or equal to 28 weeks were taken as inclusion criteria. Amniotic fluid volume was measured on ultrasound by the four quadrant technique as described by Phelan. The cases were further divided into two groups- group I with severe oligohydramnios AFI < or equal to 5cm and group II including those with mild oligohydramnios AFI between 5 and 8cm. The fetomaternal outcome was studied in all these cases.

Results-

Out of the total 150 cases of oligohydramnios taken in this study, total 81 that is 54% belonged to group I who had an AFI of less than 5 cm. Remaining 46% that is 69 patients belonged to group II with borderline oligohydramnios with an AFI between 5 and 8 cm. It was observed that in group I that is with severe oligohydramnios, 14% were between 28 and 34 weeks of gestation, 28 % were between 34 and 37 weeks 57% were between 37 and 42 weeks.

In group II, none of the patients were less than 34 weeks. 23% were between 34 and 37 weeks, while a majority 76% were between 37 and 42 weeks of gestation.

43.2% of cases among group I developed IUGR whereas 39% of group II had IUGR.

22% of patients with severe oligohydramnios also had hypertension in pregnancy whereas 11% of those with borderline oligohydramnios had associated hypertension.

In 35% of patients from group I, labour was induced in view of severe oligohydramnios, whereas 30% in group II were induced.

23% of patients with severe oligohydramnios were taken up for caesarean section without giving them a vaginal trial. The rate of caesarean section in group I was 55% whereas in group II, it was 46%.

Fetal distress occurred in 43% of patients belonging to group I and in 30% in group II. However, 3 patients with severe oligohydramnios had presented with intrauterine fetal death. The difference was found to be statistically significant. Depicted in table

TABLE-1:
The Incidence of fetal distress in the two groups-

Fetal distress	Group I	Percentage	Group II	Percentage
Present	35	43.21	21	30.43
Absent	43	53.08	48	69.56
Not applicable	3	3.7	0	0

Liqour was meconium stained in 16% of patients with severe oligohydramnios and in 11% of those with borderline oligohydramnios.

27% of patients with severe oligohydramnios delivered babies with very low birth weight that is less than 2 kg whereas only 8% in group II had a birth weight of less than 2 kg.

Between 2-2.5 kg, it was 32% for group I and 37% for group II.

53% in group II had a birth weight of more than 2.5 kg while only 40% in group II had weight more than 2.5 kg. The difference in birth weights among the two groups was found to be statistically significant. Table 2 depicts the same. Table 2 around here.

TABLE 2-

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Comparison of birth weights among the different groups.

Birth weight	Group I	Percentage	Group II	Percentage
<2 kg	22	27.16	6	8.69
2-2.5 kg	26	32.09	26	37.68
>2.5 kg	33	40.74	37	53.62

11% of babies in group I had an apgar score of less than 9/10 at 1 min and at 5 mins. Whereas only 5% in group II had a lower apgar score.

6% of babies with severe oligohydramnios had congenital anomalies while 1% of group II were anomalous.

29% of babies born to mothers with severe oligohydramnios required intensive neonatal care whereas 14% of babies of mothers with borderline oligohydramnios required NICU admission. The difference was found to be statistically significant.

In group I 3% were cases of Intrauterine fetal death. Table 3 around here.

TABLE 3:
Babies who required NICU Stay

	Group I	Percentage	Group II	Percentage
NICU	24	29.63	10	14.49
Baby with mother	54	66.66	59	85.50
NA (IUFD/ still birth)	3	3.7	O	0

Discussion-

The two groups were compared with each other with respect to the perinatal outcome in terms of gestational age, association of IUGR, association of hypertension, onset of labour, mode of delivery, fetal distress, nature of liquor, birth weight, apgar score, need of NICU admission, and presence of congenital anomalies. It was observed that all the adverse perinatal outcomes that were studied were found to be present in greater proportion of patients in the group with severe oligohydramnios (<5 cm) as compared to the group with borderline oligohydramnios (AFI 5.1-8cm). It may be inferred that the probability of adverse perinatal outcome increases with increasing severity of oligohydramnios. IUGR was found to be more common in women with severe oligohydramnios than those with borderline oligohydramnios.

The same observation was true for the association of hypertensive disorders of pregnancy which was more common in women with severe oligohydramnios.

In this study, 35% of patients in group I had associated IUGR and 22% had hypertension.

In a study by Chate P et al, 8% of patients with oligohydramnios had mild or severe preeclampsia.

Study by Chauhan P et. al. reported, preeclampsia in 12% cases. They concluded that the incidence of oligohydramnios ranges from 10 to 30 % in hypertensive patients requiring hospitalization. (3)

In a study by Chandra P et al, 38.46% had preeclampsia whereas in the study conducted by Sriya R et al 31% had preeclampsia.

In various studies, oligohydramnios has been found to have the most consistent association with IUGR. The mechanism is probably uteroplacental insufficiency which explains the genesis of both, fetal growth restriction and decreased liquor.

In presence of uteroplacental insufficiency, fetal hypoxia occurs which causes redistribution of the cardiac output in favour of fetal brain, diverting the blood supply away from kidneys and lungs.

This results in decreased fetal urinary production and reduced lung secretions which contribute to the reduced amniotic fluid volume.

The risk of IUGR is said to increase progressively as the severity of oligohydramnios increases. It has been reported to increase from 4.9% in women with a normal AFI to 20% when the deepest vertical pocket of amniotic fluid on ultrasound was <2cm and 38.6% when it was <1cm.

This also explains the association between hypertension and oligohydramnios as hypertension leads to uteroplacental insufficiency.

It was observed that induction of labour was done in more women with severe oligohydramnios. Also, about 23% of women in this category were taken for caesarean section without a vaginal trial in view of severe oligohydramnios with Doppler changes for fetal indication.

Study by Casey B et. al. found that, there was increased rate of induction of labour, in their study it was 42%. (4)

The rate of caesarean section was more in women with severe oligohydramnios as compared to the borderline group.

The rate caesarean section in group I was 55% as against 46% in group II.

The LSCS was done in 64% in the study by Chate P et al. (5)

In the study by Bangal V B et al, it was 44%.

It was 51% in the study by Casey et al. (6)

Out of the total number of caesarean sections from both groups, 52% were in view of fetal distress.

In the study conducted by Chate P et al, fetal distress was present in 42% cases.

In the study by Casey et al, fetal distress was encountered in 48% of cases.

Thus severe oligohydramnios should be considered as a high risk factor and requires aggressive intrapartum fetal heart monitoring.

The risk of meconium aspiration syndrome is significantly higher in patients with severe oligohydramnios.

About 59% of babies born to mothers with severe oligohydramnios had a birth weight below 2.5 kg.

This result was comparable to other studies, it was 62% in the study conducted by Chate P et al, and in the study by Casey et al it was 35%.

The high incidence of low birth weight may be because of chronic placental insufficiency causing fetal growth restriction.

11% of the babies born to mothers in group I had an apgar score of less than 9/10, while in group II, this figure was 5.79%.

In the study by Bangal V B et al, it was seen in 16%, in the study by Chate P et al, it was seen in 30%.

3 patients with severe oligohydramnios had macerated still birth, and hence had an apgar of 0 which is excluded from this comparison.

1 baby had an apgar score of 6/10 at 1 min as well as at 5 mins, had birth asphyxia and neonatal death on day 6 of life. This was a case of severe oligohydramnios with an AFI of 2 cm.

Severe oligohydramnios is associated with high risk of congenital malformations. 6% of babies in group I were anomalous while the proportion of anomalous babies in group II was 1%.

The malformations that we came across in this study were multicystic dysplastic kidney, left renal agenesis, left polycystic kidney, large meningocele and gross hydrocephalus in two cases.

Among these, there were neonatal deaths in two babies both with gross hydrocephalus.

29% of babies in group I required admission to NICU while 14% babies in group II went to NICU. This difference was found to be statistically significant

Conclusion-

Amniotic Fluid Index is a useful adjunct to other fetal surveillance methods to identify those infants at risk of poor perinatal outcome. Determination of amniotic fluid volume is also a valuable screening test for predicting fetal distress in labour.

The risk of adverse perinatal outcome increases with increasing severity of oligohydramnios. The earlier in pregnancy that oligohydramnios develops, the poorer is the prognosis.

Hence, every case of oligohydramnios needs careful antenatal evaluation, parental counselling, individualized decision regarding timing and mode of delivery, continuous intrapartum fetal monitoring and good neonatal care for optimum perinatal outcome.

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