

Management of Idiopathic Oligohydramnios: A Dilemma

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Abstract

Objective: To analyse the perinatal outcome in pregnancies associated with oligohydramnios onset after 34 weeks of pregnancy. *Method:* All pregnant women who attended our antenatal OPD and had an ultrasound diagnosis of oligohydramnios at or after 34 weeks of gestation were followed up till delivery. The patients diagnosed with oligohydramnios and with gestational age less than 37 weeks were given hydration therapy. Perinatal outcome was observed for the patients having oligohydramnios from the 34 to 40 weeks of gestation. *Result:* Patients with idiopathic oligohydramnios responded to hydration therapy better than that of those with oligohydramnios alongwith risk factors (75% Vs 20%). The perinatal outcomes of idiopathic group were much better than patients having risk factors [meconium staining liquor (12.5%, 17.2%; p value 0.3907), APGAR score <7 at 5minutes (3.13%, 12.9%; p value 0.0162), NICU admission (5.2%, 19.35%; p value 0.0026) and no neonatal death in idiopathic group versus 6 neonatal death in high risk group]. Both the groups had higher induction of labour (57.6%, 44.08%; p value <.005) and caesarean section rate (61.46%, 73.12%). *Conclusion:* Isolated oligohydramnios responds to hydration therapy and have better perinatal outcomes than that of oligohydramnios with risk factors.

Induction of labour rate is higher in idiopathic group, but caesarean section rate is higher in oligohydramnios with risk factors.

Keywords: Idiopathic Oligohydramnios; Oligohydramnios with Risk Factor; Hydration Therapy; Perinatal Outcome.

Introduction

Amniotic fluid which surrounds the developing foetus in amniotic sac provides several benefits to the foetus. Despite of the various advancements in technology, the regulation of amniotic fluid volume and composition remains incompletely understood. This results in part from the complexities inherent in the amniotic fluid dynamic, an enigmatic interaction of several sites of amniotic fluid secretion and excretion. Oligohydramnios is a serious complication of pregnancy and it is found to be associated with increased frequency of maternal and foetal complications like cord compression and foetal distress, foetal pulmonary hypoplasia resulting still birth, foetal growth restriction, meconium aspiration, low APGAR score, NICU admission and neonatal mortality. Maternal complications include prolonged labour due to inertia, increased rate of induction of labour, increased incidence of operative interventions due to malpresentations and its associated morbidity and mortality. We have conducted this study to know the maternal and foetal outcome of pregnancy with oligohydramnios after 34 weeks of gestation with idiopathic oligohydramnios and oligohydramnios associated with other risk factor of pregnancy. An amniotic fluid volume more than two standard deviation

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below the mean for specific gestational age or volume reduced below the 5th percentile for particular gestational age would define oligohydramnios. Based on this definition, volume less than 300 ml at term would constitute oligohydramnios. However, in recent years Amniotic fluid index (AFI) is used by most of the authors. Between 36-42 weeks, Phelan et al. defined oligohydramnios as AFI less than or equal to 5cm. The likelihood of pregnancy with Oligohydramnios is 2.4% at 40 weeks of pregnancy.

Methodology

A prospective cohort study was conducted in NEIGRIHMS from January 2013 to January 2016 and a total number of 282 cases were taken for this study. They were grouped into 2 categories as oligohydramnios with known risk factors and oligohydramnios without any risk factors (idiopathic). Thorough history was taken and complete examination was done in all the selected cases. Clinical evidence of oligohydramnios was looked for. After provisional clinical diagnosis of oligohydramnios, it was confirmed by single or serial USG scans. At the same time previous obstetric records and USG reports were reviewed. Associated antenatal complications were also recorded. Oligohydramnios was defined as AFI<5 cm. AFI was calculated by 4 quadrant amniotic fluid volume measurement technique. All women with singleton pregnancy with Oligohydramnios diagnosed clinically at or beyond 34 weeks of gestation and confirmed by USG scan were included in this study. Multiple pregnancies, intrauterine foetal death, ruptured membranes, foetal anomalies and high risk

pregnancies that had preterm deliveries were excluded from this study. All the selected cases underwent baseline investigations like haemoglobin level, blood grouping and Rh typing, random blood sugar and urine examination. Other investigations like Liver Function Test, Kidney Function Test, Coagulation profile, Platelet count in preeclampsia, Oral Glucose Challenge Test, Glucose Tolerance Test in diabetics, NST etc were also done. In few patients Doppler studies were performed to determine the extent of foetal compromise. Management was conservative with oral hydration and intravenous hydration with isotonic Ringer's Lactate 1 litre daily for 7 days. Those who had high risk factors like preeclampsia, IUGR etc were induced using Dinoprostone gel, Misoprostol tablets and oxytocin infusion after Bishop's scoring or taken for elective LSCS according to clinical condition. The nature of amniotic fluid was noted at artificial rupture of membranes. Patients with no known risk factors were allowed spontaneous onset of labour with strict foetal surveillance at term. So, factors like onset of labour, mode of delivery were taken into consideration. All cases in labour were monitored by continuous electronic monitoring. All newborns were attended by the Paediatrician. Newborns were admitted in NICU for observation accordingly. Primary foetal outcome in terms of birth weight, Apgar score<7 in 1 and 5 mins, NICU admission were studied. Secondary foetal outcome like early neonatal death associated with oligohydramnios were taken into consideration.

Final results were recorded and tabulated. Results were statistically analysed by student t test and chi square test.

Results & Observations

Table 1: Distribution of patients

Gestational Age	Idiopathic Oligohydramnios	Oligohydramnios with risk factors
<37 weeks	38	86
37-40 weeks	58	100
Total	96	186

Table 2: Patients with oligohydramnios due to known pathology

Oligohydramnios due to known pathology	Preeclampsia	Chronic hypertension	IUGR	Total
No. of patients	93	37	56	186

Table 3: Response to hydration therapy

	Idiopathic Oligohydramnios	Oligohydramnios with risk factors	p value
Improvement with hydration therapy	27/36 (75%)	10/50 (25%)	<0.0001

Table 4: Mode of delivery

	Idiopathic Oligohydramnios (n=96)	Oligohydramnios with risk factors (n=186)	p value
Induction of labour	60 (57.6%)	82 (46.59%)	0.0611
Vaginal Delivery	37 (38.54%)	50 (28.40%)	0.0611
Caesarean Section	59 (61.46%)	136 (73.12%)	0.0611

Table 5: Neonatal morbidity & mortality

	Idiopathic Oligohydramnios (n=96)	Oligohydramnios with risk factors (n=186)	p value
Meconium stained liquor	12 (12.5%)	32 (17.2%)	0.3907
Apgar Score<7	3 (3.13%)	24 (12.90%)	0.0162
NICU admissions	5 (5.20%)	36 (19.35%)	0.0026
Mean Birth weight	2.450 kg	2.250 kg	
Neonatal death	0	6	

We had 282 numbers of cases of oligohydramnios out of which 96 cases were idiopathic and 186 cases were high risk pregnancy with oligohydramnios. Among them 114 cases presented between 34-37 weeks of gestational age (38, 76), 158 cases (58,100) presented between (37-40) weeks of pregnancy. We started with hydration therapy in 86 cases that were below 37 weeks of pregnancy. Liquor (AFI) were increased in most of the idiopathic cases but not with pregnancy who had risk factors ($p < 0.0001$). In idiopathic Oligohydramnios 57.6% of women had induction of labour but in patients with risk factors had 44.08% women had induction of labour which is statistically significant ($p = 0.005$). Caesarean section rate was quite higher in risk factor groups 73.16% and 61.46% in idiopathic group, but not statistically significant ($p = 0.06$).

Vaginal delivery rate was higher in idiopathic group. Meconium staining liquor was seen in 12.5% cases in idiopathic group and 17.2% in risk factor group. APGAR score <7 and NICU admission rate were quite higher in risk factor groups which was statistically significant ($p = 0.0026$, $p = 0.034$ respectively). There was not a single case of perinatal mortality in idiopathic group but we had 6 cases of neonatal death in risk factor group. Mean birth weight of newborns with idiopathic group was 2.45kg and pregnancy with risk factors was 2.25 kg.

Discussion

It is well established that oligohydramnios is associated with a high risk of adverse perinatal outcome [1,2,3] and at the same time it is a poor predictor for the same [4,5].

Our study shows that oligohydramnios with unfavourable maternal and/or foetal conditions

(such as IUGR, Preeclampsia, chronic hypertension) leads to worse perinatal outcome. Oligohydramnios cases that did not have any coexisting medical or obstetric conditions are called idiopathic oligohydramnios. Maternal hydration therapy is an effective method in the management of idiopathic oligohydramnios.

In our study 75% of women with idiopathic oligohydramnios improved with hydration therapy but only 20% women with oligohydramnios and other risk factors improved with hydration therapy ($p < 0.0001$). Two studies showed that in pregnancies complicated by isolated oligohydramnios, hydration therapy significantly improves the quantity of amniotic fluid [6,7].

In our study 61.46% of women with idiopathic oligohydramnios underwent LSCS but 73.12% women in oligohydramnios with risk factors underwent the same ($p = 0.0611$). In our study 57.6% of women with idiopathic Oligohydramnios underwent induction of labour and 44.08% women with Oligohydramnios and other risk factors underwent the same ($p = 0.0050$). Nir Melamed et al had a higher rate of labour induction and caesarean delivery [8]. Casey BM et al [2] found that there was increased rate of induction of labour (42%) in the group with high risk factors.

Study by Prakash Parul et al [9] found 52% induction of labour which constitute both pregnancy with high risk group and idiopathic oligohydramnios. Vaginal delivery rate was higher in idiopathic Oligohydramnios (38.54%) compared to Oligohydramnios with other risk factors (26.88%) ($p = 0.0611$). In our study caesarean section rate was high in both groups. It may be due to higher number of high risk pregnancy cases, and induction with low Bishop Score and continuous CTG monitoring. Meconium staining of liquor was apparently same

(12.5%, 17.2%) in both the study groups (p value 0.3977).

Blackwell et al [10] found that 16.7% patients had meconium staining liquor and concluded that meconium staining liquor does not appear to be related to amniotic fluid volume in term pregnancies. However, neonatal morbidity was much lower in the idiopathic group compared to Oligohydramnios with risk factor as it was evident from the NICU admission rate (5.2% vs. 19.35%) (p value 0.0026). It was also seen that poor APGAR score (<7) at delivery was also more prevalent in Oligohydramnios with risk factor (11.29%) compared to the idiopathic group (3.13%), p value being 0.0354. Also, there were 6 cases of perinatal mortality in the Oligohydramnios with risk factor group, whereas there were none in the idiopathic group.

Study by Prakash Parul et al [9] found that mean APGAR score was less in Oligohydramnios group. APGAR score ≤ 7 was considered as abnormal. APGAR score ≤ 7 at 1 minute was found in 33% cases. Study done by Jandial et al in which APGAR score <7 at 5 minute was in 12% of cases of Oligohydramnios group [11].

In our study NICU admission rates were (5.2%, 19.3%) in both groups respectively. NICU admissions were noted to be 76.19% and 44.88% in abnormal and normal umbilical artery Doppler group respectively [12].

In our study the NICU admission was less in high risk group because we had taken post-dated pregnancy in high risk category. In our study there was no neonatal death in idiopathic group, but 6 baby died in risk category, and out of 6, 2 had meconium aspiration syndrome. In idiopathic oligohydramnios the perinatal outcome was similar to low risk pregnancy. Study by Zhang et al concluded that pregnancies with isolated oligohydramnios had perinatal outcomes similar to pregnancies with a normal amniotic fluid index [13].

Conclusion

To conclude, isolated oligohydramnios responds to hydration therapy and has perinatal outcome is almost similar to low risk pregnancy. But in our study the sample size of idiopathic oligohydramnios is small. Hence, a large randomized controlled trial is required to finally conclude whether conservative management or intervention is the choice of treatment for the patients with idiopathic oligohydramnios in near-term and early term pregnancies.

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