Oligohydramnios in Low Risk Pregnancies at Western Regional Hospital, Pokhara

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Aims: This study is done to see the maternal and fetal factors associated with isolated oligohydramnios.

Methods: It is a retrospective observational study done at Western Regional Hospital, Pokhara. All cases of oligohydramnios except those with diabetes mellitus, hypertension, premature rupture of membranes, preterm labour and fetal congenital anomalies were included in the study. SPSS 16 and MS-Excel were used for data entry and analysis. Results were presented as graphs and tables.

Results: Sixty cases were enrolled in the study and the mean age was 25.6 years. Oligohydramnios was more prevalent among primigravida compared to multigravida (62% vs. 38%). Half of the women (n=30) delivered in between 37 to 40 weeks of gestation while 47% (n=28) of the women were post dates and two were post term. LSCS was the most common mode of delivery in this study (n=48). Anhydramnios was detected in seven women (12%) during caesarean section and rest had scanty liquor (41 in LSCS and 12 in vaginal delivery). One fifth of them (n=12) had low birth weight and there were no cases of growth retardation. Eighty two percent of women (n=49) had scanty clear liquor while only seven percent (n=4) had meconium stained scanty liquor. One had stillbirth and the rest had Apgar score of six or more including anhydramnios.

Conclusions: There were seven cases of anhydramnios and four cases of meconium stained liquor. All the live births had Apgar score of six or more. There was one stillbirth and neonatal admission each while no neonatal death in this study.

Keywords: amniotic fluid index, fetal outcome, oligohydramnios

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INTRODUCTION

Amniotic fluid (AF) is an essential component for well being of the growing fetus during the intra-uterine life. It is regulated by the trans-membranous flow (across the amnion), intra-membranous flow (across the fetal vessels), transfer of water across the fetal skin (up to 22-25 weeks), fetal lung secretions, fetal urine (after second trimester) and swallowing. It maintains the even temperature, cushions the fetus from trauma and prevents the cord compression. It helps in development of musculoskeletal, gastro-intestinal and pulmonary systems of the fetus.[1] Sonographic assessment of AF can be done by measuring single deepest pocket, amniotic fluid index (AFI) or a qualitative estimate. AFI (Phelan and co-workers, 1987) is the most commonly used method which is calculated by summing up the vertical depths of the largest pocket in each four quadrants.[1,2]

Oligohydramnios is defined as the AFI of 5 cm or less. It affects 1-2 percent of pregnancies. It is either idiopathic or associated with conditions like fetal growth restriction, fetal anomalies, ruptured membrane, utero-placental insufficiency and drug use.[1] It is often seen in association with maternal conditions like diabetes, hypertension or fetal conditions like congenital malformation and intrauterine growth restriction. Each of these conditions can predispose the fetus to the adverse fetal outcome. Overall prognosis is variable and largely depends upon the underlying etiology. Meconium aspiration, perinatal asphyxia and still births are at times more common in these cases which may not be solely due to the reduced liquor volume itself. Higher rates of induction, instrumental deliveries and caesarean sections are in practice for better perinatal outcome in cases of oligohydramnios. This study was carried out to see the maternal and fetal factors associated with isolated oligohydramnios.

METHODS

It is a retrospective cross sectional study done at Western Regional Hospital Pokhara from January to March 2017. Study approval was taken from the hospital. All diagnosed cases of oligohydramnios at

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≥37 weeks of gestation were included. The cases with diabetes mellitus, hypertension, premature rupture of membranes, preterm labour and fetal congenital anomalies were excluded. Data were collected regarding maternal age, gravidity, parity and gestational age. Outcome parameters like mode of delivery, color and amount of liquor, birth weight, Apgar score, neonatal admission and neonatal death were recorded in predesigned proforma. SPSS 16 and MS-Excel were used for data entry and analysis. Results were presented as graphs and tables.

RESULTS

During the period of study, there were 1,612 deliveries (1,400 vaginal deliveries and 212 cesarean section). Sixty cases were enrolled in the study after applying the inclusion and exclusion criteria. In the study, the women were of 17 to 40 years and the mean age was 25.6 years. Eighty two percent (n=49) of the women were of 21 to 35 years while only 16% (n=11) belonged to the extremes of reproductive age i.e. ≤20 years and >35 years (Figure 1). Oligohydramnios was more prevalent among primigravida (62%, n=37) compared to multigravida (n=23). Thirty eight percent women were (n=23) multiparous in this study (Figure 2). Half of the women (n=30) delivered in between 37 to 40 weeks of gestation while 47% (n=28) of the women were post dates and two were post term (Figure 3).

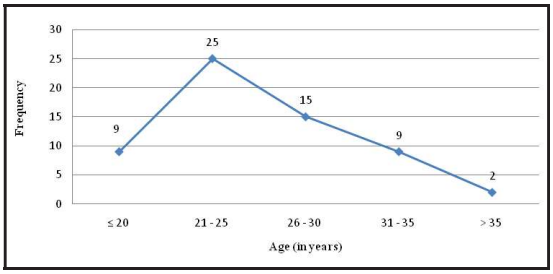

Figure 1. Age distribution

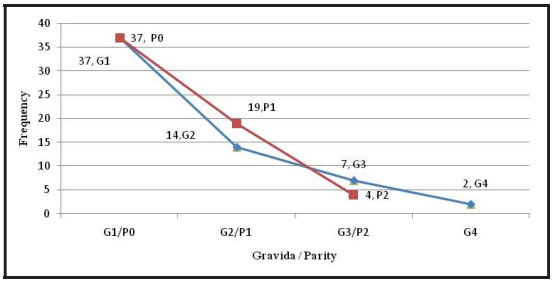

Figure 2. Gravidity and parity distribution

LSCS was the most common mode of delivery in this study (n=48). All the women in the extremes of the reproductive age (n=11) and majority of the primigravida (31/37) had operative delivery (Table 1). Anhydraminos was detected in seven women (12%) during caesarean section and rest had scanty liquor (41 in CS and 12 in vaginal deliveries). In the study, women delivered 2 to 4 kg babies and the average birth weight was 2.8 kg. Three fifth of the women (n=48) had >2.5 kg babies while only one fifth of them (n=12) had low birth weight babies (Figure 4).

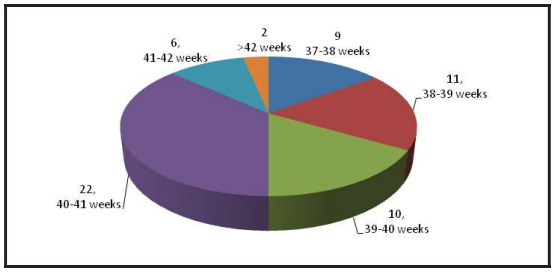

Figure 3: Period of gestation

Table 1. Mode of delivery by age, gravidity and parity

	Mode of delivery		Total
	LSCS	Vaginal delivery	
Age (in years)			
≤ 20	9	0	9
21 - 25	18	7	25
26 - 30	14	1	15
31 - 35	5	4	9
> 35	2	0	2
Gravida			
1	31	6	37
2	9	5	14
3	6	1	7
4	2	0	2
Parity			
0	31	6	37
1	14	5	19
2	3	1	4

All the seven cases with anhydramnios had AFI of four or less. Among the women with scanty liquor majority had AFI of three to five (49/53) (Figure 5). Eighty two percent of women (n= 49) who had oligohydramnios had scanty clear liquor while only seven percent (n=4) had meconium stained scanty liquor (Figure 6). One had stillbirth and rest of them had Apgar score of 6 or more including anhydramnios.

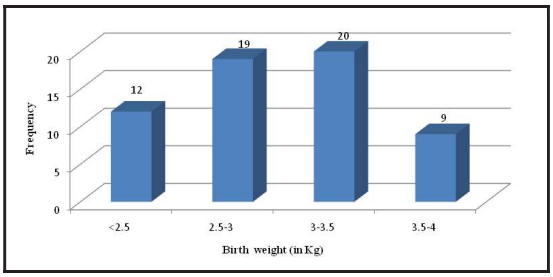

Figure 4. Birth weight

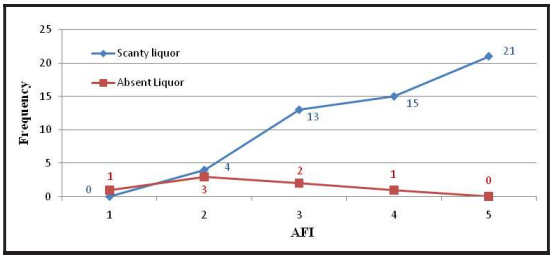

Figure 5. Liquor volume and AFI

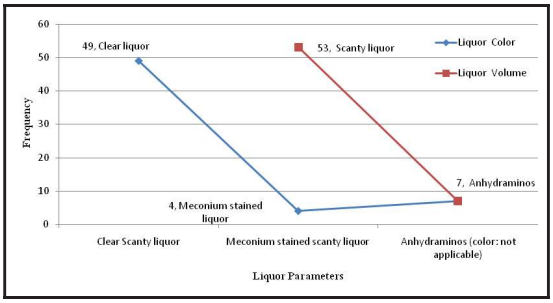

Figure 6: Liquor volume and color

DISCUSSION

The mean age (25.6 years) and peak age group (21 to 25 years) in this study are comparable to the study done by Jagatia and colleagues (mean: 23.66, peak age: 20-25 years).[3] Similar to the study done by Bhat et al, majority of the women in this study were in 20-30 years age group (67%, n=40).[4] The increased incidence of oligohydramnios in primigravida was comparable to other studies.[3-5] Post dated pregnancies with oligohydramnios (47%) was similar to the study done by Ghimire and colleagues (43%).[5]

As in other studies, LSCS was the most common mode of delivery (48/60) in this study which was more prevalent in primigravida (31/37).[3,5,6] The primary cause of the LSCS was oligohydraminos and associated other indications were breech presentation in two cases and previous caesarean section in three cases. Induction of labour was not done in most of the cases (59/60) in this study. In one case where labor was induced with misoprostol and argumentation done with oxytocin, there was sudden absence of fetal heart sound at late first stage followed by vaginal delivery of fresh still birth baby. Labour induction in cases of oligohydramnios has higher chances of meconium stained liquor and fetal distress.[7] There were no instrumental deliveries in this study while other studies had variable number of instrumental deliveries ranging from 1% to 16%.[3-5]

The mean birth weight of the babies is comparable to other studies (2.8kg vs 2.3kg).[3,4] Majority of the women had average weight babies (48/60). There were no cases of intrauterine growth retardation in this study while other studies had a higher number of IUGR.[3,4]

None of the babies was asphyxiated which is comparable to other studies.[8,9] Among the four cases that had meconium stained liquor, one woman had fresh still birth, while the rest had delivered with Apgar score of eight. Although there is association between the meconium passage and adverse perinatal outcome, it has been found to have poor sensitivity and poor predictive value.[10,11] The still birth in this study is comparable to study done by Asnafi N et al where stillbirth was not found to be associated oligohydramnios.[12]

In this study, only one case needed NICU admission for Down's syndrome and none of the cases had early neonatal death which is comparable to other studies.[8,6,11] Similar perinatal outcomes have been found in pregnancies with oligohydramnios and pregnancies with a normal AFI in comparative study done by Singhal et al[9], Mushtaq et al[11], Voxman et al[13] and multicentre clinical trial done by Zhang et al.[14] However, some studies have reported higher NICU admissions for birth asphyxia, meconium aspiration and low birth weight.[3,4,15]

In a study done by Sultana and colleagues, oligohydramnios even in high risk pregnancies led to negligible and statistically insignificant differences in Apgar score at birth in comparison to the normal AFI with the same high risk factors.[16] In this study although scanty liquor was detected by AFI, accurate antepartum detection of anhydramnios was less. Similarly, in a review done by Magann et al commonly used methods of amniotic fluid estimation, AFI and single deepest pocket technique, were found to have low sensitivity in accurately detecting low amniotic fluid volume.[17] Similar to

this study, scanty liquor was detected in 97% of the cases with oligohydramnios cases in study done by Gupta et al.[18] Anhydramnios were not detected by ultrasound in this study. However, Moses et al had ultrasonographically detected anhydramnios in five percent of the cases (8/150).[19]

Although there is negative correlation between the decreasing AFI with caesarean section and one-minute Apgar score, it was found to have significant effect in cases of fetal distress only.[20] In another study, in comparison with borderline liquor, oligohydramnios was associated with statistically significant higher incidence of meconium stained liquor. However, low Apgar score, neonatal admission and neonatal death between the two groups were not statistically significant.[21] Similarly, Ott also found oligohydramnios to be poor predictor of the adverse perinatal outcome.[22]

CONCLUSIONS

The mean age was 25.6 years and 11 women belonged to the extremes of reproductive age (<20 and >35 years). Oligohydramnios was more prevalent among primigravida. Half of the women delivered in between 37 to 40 weeks of gestation and two were post term. Majority of them with scanty liquor had amniotic fluid index of three to five. LSCS was the most common mode of delivery. There were seven cases of anhydramnios and four cases of meconium stained liquor. There was one stillbirth and neonatal admission each but no neonatal deaths. All live births had Apgar score of six or more.

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