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Research Article

Fetomaternal Outcomes in Cases of Term Oligohydramnios

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Abstract

Background: Oligohydramnios is one of the major causes of maternal and perinatal morbidity and mortality. Aim of current study was to evaluating feto-maternal outcome after 37 weeks of pregnancies with oligohydramnios.

Methods: A case control study was conducted from 2011 to 2014. 255 pregnant women (85cases in oligohydramnios and 170 cases in control group) were included, from 37 to 41 weeks. The inclusion criteria for the study purpose was: Thirty seven completed weeks of gestation, amniotic fluid index of ≤5 cm, intact membranes, singleton pregnancy with cephalic presentation. Following patients were excluded from the study: gestational age less than 37 completed weeks associated fetal malformations, ruptured membranes, malpresentation and multiple gestation Fetal growth restriction, Chromosomal abnormalities, diabetes, maternal hypertensive disease and instrumental delivery. To determine the association between oligohydramnios and fetomaternal outcomes, chi-square and Fisher's exact test were used if necessary. Kolmogorov- Smirnov (KS) test was used to test normality of variables distribution in samples.

Results: There was not statistically significant difference regarding maternal age, gestational age, gravidity and parity between case and control group .Results of the present study revealed that the rate of cesarean was significantly higher in oligohydramnios group compared to the control group (75.3% vs. 36.5% respectively). There was statistically significant increasing in meconium passage in control group compared to oligohydramnios group (17.1% vs. 5.9% respectively). Mean of first minute and five minute APGAR score, mean of birth weight, fetal sex and need to admission to NICU were not statistically different between two group of study.

Conclusion: It can be concluded that an amniotic fluid index of ≤ 5 cm detected after 37 completed weeks of gestation is not an indicator of poor perinatal outcome, but it is associated with increasing rate of cesarean delivery.

Keywords: Amniotic Fluid Index, Oligohydramnios, Fetomaternal outcome, Maternal outcome, AFI ≤5 cm

Introduction

The amniotic fluid (AF) is a part of the baby's life support system. It aids in the development of muscles, limbs, lungs and digestive system. Amniotic fluid is produced soon after the amniotic sac is formed at about 12 days after conception. It is first made up of effusion that is provided by the mother's circulation and then around the 20th weeks fetal urine becomes the primary substance [1].

While debate continues regarding the best method to estimate AFV (Amniotic Fluid Volume), it has become evident that there are numerous maternal and fetal risk factors associated with a reduction of this parameter [2]. Oligohydramnios was defined as AFI ≤ 5 cm (Amniotic Fluid Index) or the absence of a pocket measuring at least 2 × 1 cm [3].

In some study, a statistical significant difference of FD (Fetal distress) in AFI≤ 5 cm and normal AFI in term and postdate pregnancies was observed. Decreased amount of amniotic fluid, particularly in third trimester, has been associated with multiple fetal risks like, pulmonary hypoplasia, intrauterine growth restriction and still births. It is found to be associated with an increased risk of caesarean delivery for fetal distress and low APGAR score. However, some studies done in cases of abnormal liquor volume show that amniotic fluid index is a poor predictor of adverse outcome [4,5].

Decrease in amniotic fluid volume or Oligohydramnios has been correlated with increased

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risk of intrauterine growth retardation, meconium aspiration syndrome, severe birth asphyxia, low APGAR scores and congenital abnormities. Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity and mortality one side and decreased caesarean deliveries on the other side [6]. The present study was carried out to find out the effect of oligohydramnioson maternal and perinatal outcome in term pregnancies.

Materials and Methods

A case- control study was done over a four years period from 2011 to 2014. It was conducted in the Department of Obstetrics & Gynaecology Imam Reza Teaching Hospital Kermanshah University of Medical Sciences. The population study comprised of 85 cases of oligohydramnios (AFI up to 5 cm) in term pregnancies (37-42 weeks of gestation).

Oligohydramnios is the condition of having too little AF. It is defined as AF index is less than 5 centimetres (or less than the 5th percentile) [7].

The inclusion criteria for the study purpose was: Thirty seven completed weeks of gestation, amniotic fluid index of ≤5 cm, intact membranes, singleton pregnancy with cephalic presentation. Following patients were excluded from the study: gestational age less than 37 completed weeks associated fetal malformations, ruptured membranes, malpresentation and multiple gestation fetal growth restriction, Chromosomal abnormalities, diabetes, maternal hypertensive disease and instrumental delivery

The study subjects were divided into two groups of 255 parturient each as follows:

Group I: (85 cases study group): diagnosed with oligohydramnios.

Group II: (170 cases control group): had normal amniotic fluid index (5 <AFI<25 cm).

It was approved by Clinical Research Development Center, Imam Reza Hospital. Kermanshah University of Medical Sciences (KUMS), name and private information of patient was kept secret.

Based on the review of medical database data was collected regarding maternal age, parity, gravidity, gestational age, method of delivery ,instrumental delivery, fetal sex, birth weight, APGAR score at 1 and 5 minutes(<7 or >7) need for admission to the intensive care unit (ICU). Meconium passage. The AFI was calculated in centimetres based on the last value measurement. Data analyzed based on coded data by SPSS 20software, Chi-square test was used to analyze the data and it is necessary to say with Kolmogorov - Smirnov (KS) test was used to test normality of variables distribution in samples.

Results

Data from the 255 patients who were admitted to the high-risk pregnancy unit diagnosed with and without oligohydramnios were collected (85 cases in study group and 170 cases in control group). Table 1 present's demographic information in two study groups. For the majority of the maternal characteristics studied, no significant differences were observed in the groups.

Table 2 compares method of delivery (normal vaginal delivery versus caesarean delivery) among the two groups. Women with oligohydramnios and normal AFI had revealed statistical significant difference in the mode of delivery (P=0.0001).

	Age (year)	Gestational age (Week)	Parity	Gravidity
Study group (mean ± SD)	27/06 ±75/5	38/18 ± 1/24	1/42 ± 0/49	1/72 ± 1/09
Control group (mean ± SD)	27/41 ± 5/81	38/85 ± 1/24	1/55 ± 0/41	1/99 ± 1/61
P-VALUE	0.472	0.384	0.403	0.185

Table 1: Demographic information in two study groups.

	Study group N (%)	Control group N (%	p-value
Delivery method type NVD Cesarean	 21(24/7%) 64(75/3%)	 108(63/5%) 62(36/5%)	 0.0001

Table 2: Method of delivery in two study groups.

	Study group	Control group	p-value
Weight Birth	2894/12±370/12	2847/35±270/25	0.49
Sex Female Male	 46(54/1%) 39(45/9%)	 71(41/8%) 99(58/2%)	 0.062
NICU Need to Yes No	 0(0%) 85(100%)	 5(2/9%) 165(97/1%)	 0.12
Meconium passage Yes No	 5(5/9%) 79(92/9%)	 29(17/1%) 141(82/9%)	 0.009
First minute APGAR≥7	85(100%)	169(99/41%)	0.059
Fifth minute APGAR≥7	85(100%)	169(99/41%)	0.11

Table 3: Neonatal outcomes in two study groups.

Table 3 points to neonatal outcomes in two study groups. It shows to statistical significance between the two groups as regards to meconium passage (P=0.009).

No statistical significant difference was observed between the two groups as regards to fetal sex. The mean birth weights were quite closed as shown in table 3. With no statistically significant difference.

Discussion

In this case- control study 255 cases included 85 (33.3%) cases in study and 170 (66.7%) cases in control group). The mean gestational age in the present study was 38.18 ± 1.24 weeks in the study group and it was 38.85 ± 1.24 weeks in the control group. In the study done by VennaVidyasagar [8] the mean gestational age was 36.395 ± 3.396 weeks in the study group and 36.975 ± 2.75 weeks in the control group.

Mean gestational age in the study done by Biradar, et al. was 38.5 ± 2.1 weeks. One third of them were primigravidae and two thirds were multigravidae [9].

In the present study there were 14(8.2%) cases in control group and 2(2.4%) cases in study group in 41 weeks. No cases had post-dated pregnancies.

In Kaur Tajinder, et al. [10], the mean maternal age was 25.8 ± 4.1 years which is comparable to the study by Krishna jagatia [11] and incomparable to the present study which is 27.06 in study group and 27.41 in control group.

In the present study the highest percentage of women in the case group (57.6%) had para one and in control group (55.3%) had para two. All the population study had para one to two.

In the study by Amany Hamed [12], the highest percentage of women in the oligohydramnios and control groups (58.0% & 52.0% respectively) had Para one to three. This is partially in agreement with that of Ghike, et al. [13] who observed that the majority of the women in both the groups were either nulliparous or Para one. Conversely, Jagatia, et al. [11] reported that the incidence of oligohydramnios was more in primipara (52.0%) which is compatible with the study of Petrozella, et al. [14] who showed that the incidence of oligohydramnios was 60.0% in primigravida. Such dissimilarities among the results of the above mentioned studies and the present one could be attributed to the differences in the chosen design for the study, sample size and the criteria of its selection.

Various studies show different rates of LSCS in pregnant women with amniotic fluid index of <5 cm. The LSCS was done in 47%in [15]. Study by Sharayu Mirji, et al. [16] found that, there was increased rate of induction of labour (35%) and Caesarean section (23%) in oligohydramnios cases.

In the [8], study, LSCS was performed in 48.78% cases in the study group. In the control group, Caesarean section rate was 32.5%. In the study by Bangal VB1 rate of caesarean section was 44%. In this study instrumental vaginal delivery was observed just in 1 case of study group. In opposite to other studies the caesarean section rate in our center in oligohydramnios patients is high, this may be due to early detection and early intervention in our referral hospital.

Regarding fetal outcomes high one minute APGAR scores (>7) was seen in 85(100%) cases of study group and 167(98.23%) cases in control group and only 0.6% (1 case) had low APGAR score [4] at five minute.

Our finding is against the study by Pawanpreet Kaur, et al. [17] who found the mean Apgar score for study group was at 6.93 at 1 minute, and 8 at 5 minute. The mean Apgar score for women with AFI >5 cm (control group) was 7.54 at 1 minute and 8.84 at 5 min.

In the present study no neonate in study group need to admission to NICU and just 5 neonates (2.9%) were admitted to NICU in control group, this paradox maybe due to the higher percentage of meconium passage in control group. This is against the study by [8]. In that study 15 (36.585%) neonates were admitted to NICU [7]. Admission to NICU was 92% in the study by Bhagat M, et al. [18] which is not similar to our study.

In the study by Veena Vidyasagar [8] four babies (9.76%) developed meconium aspiration and two babies (4.88%) had neonatal sepsis. However in the present study 5(5.9%) patients in control group and 29 patients (17.1%) in control group had meconium passage.

In the present study mean of birth weight in study and control group were (2894/12 ± 370/12 & 2847/35 ± 270/25) that is not significant meaningful.

About the fetal sex the highest percentage in control group was male sex 58.2% and female sex in study group 54.1% (p=0.062). Although it is not meaningful statistically, but oligohydramnios, may be seen more in female new-borns.

Conclusion

We concluded that oligohydramnios after 37 completed weeks of gestation is not an indicator of poor perinatal outcome, but it is associated with increasing rate of caesarean delivery.

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