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Original Research Article

A HOSPITAL BASED PROSPECTIVE STUDY TO ASSESS THE OBSTETRIC AND PERINATAL OUTCOME IN PREGNANCIES WITH OLIGOHYDRAMNIOS AND POLYHYDRAMNIOS AT NEWLY ESTABLISHED TERTIARY CARE CENTER

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Abstract

Background: Fetal urine is the major contributor to the volume of amniotic fluid in the latter half of pregnancy. Ultrasound measurement of amniotic fluid can be assessed either as subjective assessment or as a semi quantitative method. The aim of this study to determine the obstetric and perinatal outcome in pregnancies with oligohydramnios and polyhydramnios at newly established tertiary care center. **Material & Methods:** A hospital based prospective study done on 50 singleton pregnancy with gestational age >37 weeks in department of Obstetrics & Gynaecology at Government Medical College, Pali, Marwar, Rajasthan, India. Oligohydramnios is confirmed by measuring Amniotic Fluid Index by USG. Polyhydramnios was defined as an amniotic fluid index (AFI) more than 24 cm without any defined cause. Decision of delivery by vaginal route or elective/ emergency LSCS was done as required. Independent sample t-test for quantitative variables and chi-square for qualitative variables were used. A two-tailed p-value less than .05 was considered as the level of statistical significance. **Results:** The mean age of mothers at time of delivery was lower (23.78 yrs) in the oligohydramnios group compared to the (28.26 yrs) polyhydramnios groups ($p<0.05$*). Comparison of pregnancy outcome between the two groups is represented in Table 2. Low birth weight, NICU admission, fetal distress, fetal death, APGAR score, preterm delivery, and neonatal death were higher in the polyhydramnios group ($p<.05$). However, meconium staining, mode of delivery and postpartum hemorrhage were almost equal in the two groups ($p>.05$). **Conclusion:** AFI assessment serves as an important tool and remains as an effective screening test in predicting fetal distress in labour that requires cesarean section.

INTRODUCTION

Amniotic fluid has number of important roles in embryo and fetal development. Fetal urine is the main source of amniotic fluid. Fetal kidney starts to make urine before the end of first trimester. Urine production increases until term. Fetal urine is the major contributor to the volume of amniotic fluid in the latter half of pregnancy. It has been estimated that the volume of urine produced per day during the latter half of gestation is 35% of its body weight.[1] The fetal swallowing of amniotic fluid is evidenced by presence of epidermal debris including lanugo hair in the meconium. It has been estimated that the fetus swallow's amniotic fluid which is equivalent to 15% of its body weight.[2] Oligohydramnios is defined as decrease in the amniotic fluid level below normal. (Normal level 8-15cm) It is associated with congenital anomalies and perinatal mortality. Oligohydramnios can result in subjective crowding of the fetus in utero. Oligohydramnios can occur in 1-2% of pregnancies approximately.[3] The pathophysiology of oligohydramnios before membrane rupture is unclear.

The theory is the reduced perfusion of the placenta causes hypovolemia, and an automatic redistribution of fetal blood volume to vital organs resulting in reduced blood supply to kidneys leading to reduced production of urine**.**

Oligohydramnios is a frequent complication of pregnancy that is found to be associated with a bad perinatal outcome. Etiologies include premature rupture of membranes (PROM), congenital anomalies, intrauterine growth restriction (IUGR),

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post datism, drugs, abruptio placentae, twinning abnormality, severe maternal illness and idiopathic oligohydramnios. Prolonged oligohydramnios leads to pulmonary hypoplasia and fetal compression syndrome. Perinatal morbidity and mortality are significantly increased in pregnancies with oligohydramnios. Ultrasound finding of oligohydramnios should remind the clinician to evaluate the patient for other significant illness.

Ultrasound measurement of amniotic fluid can be assessed either as subjective assessment or as a semi quantitative method. Semiquantitative methods include single maximal vertical pocket (SVP), the two-diameter pocket technique and the amniotic fluid index (AFI).[4,5]

Polyhydramnios in term means excessive amniotic fluid volume. In definition, it is a condition where amniotic fluid volume is equal to or more than 2000 ml, which is usually detected in the third trimester. The prevalence of polyhydramnios is 0.2% to 1.6%. There is reported increase rate of both maternal and perinatal morbidities due to polyhydramnios. Common complications in polyhydramnios include pregnancy induced hypertension (PIH), maternal respiratory difficulties, increased risk of preterm labor and prematurity of neonates, increased rate of cesarean section (C/S), and a high prevalence of fetal mortality and morbidity.[6]

The risk factors for polyhydramnios include diverse maternal and fetal conditions, such as gestational diabetes mellitus, placental abnormalities, isoimmunization, multiple gestation, congenital anomalies, and chromosomal aberrations. The aim of this study to determine the obstetric and perinatal outcome in pregnancies with oligohydramnios and polyhydramnios at newly established tertiary care center.

MATERIALS AND METHODS

A hospital based prospective study done on 50 singleton pregnancy with gestational age >37 weeks in department of Obstetrics & Gynaecology at Government Medical College, Pali, Marwar, Rajasthan, India.

Inclusion Criteria

- Pregnancies without anomaly with intact membranes
- AFI ≤5

Exclusion Criteria

- Singleton pregnancy with gestational age <37weeks
- Patients with multiple gestation
- Patients with fetus having congenital anomamlies like renal agenesis, polycystic kidney disease.
- Ruptured membranes or draining PV

Method

After collecting a detailed history, complete examination was done. All required investigations performed with respect to patient's condition. Oligohydramnios is confirmed by measuring Amniotic Fluid Index by USG. Polyhydramnios was defined as an amniotic fluid index (AFI) more than 24 cm without any defined cause. Routine management in form of rest, oral and intravenous hydration, left lateral position and control of etiological factor was done if present. Fetal surveillance was done by means of modified Biophysical profile and USG. Decision of delivery by vaginal route or elective/ emergency LSCS was done as required. Some patients were already in labour and others allowed to go into spontaneous labour. If delivery is made by caesarean section, the indication was recorded.

Statistical Methods

All data analyses were conducted using Statistical Package for the Social Sciences version 22.0 (SPSS Inc., Chicago, IL), and the descriptive variables included mean and standard deviations. Independent sample t-test for quantitative variables and chi-square for qualitative variables were used. A two-tailed p-value less than .05 was considered as the level of statistical significance.

RESULTS

The mean age of mothers at time of delivery was lower (23.78 yrs) in the oligohydramnios group compared to the (28.26 yrs) polyhydramnios groups ($p<0.05$*). Most of the patients were primiparous, this difference was found to be non-significant (table 1). Comparison of pregnancy outcome between the two groups is represented in Table 2. Low birth weight, NICU admission, fetal distress, fetal death, APGAR score, preterm delivery, and neonatal death were higher in the polyhydramnios group ($p<.05$). However, meconium staining, mode of delivery and postpartum hemorrhage were almost equal in the two groups ($p>.05$). The average and standard deviation of AFI were 22.56 ± 5.7 cm in the polyhydramnios group and 4.08±1.06 cm in oligohydramnios group. APGAR score was above 7 in 84% patients in oligohydramnios group, and 72% patients in the polyhydramnios group. This difference was found to be significant (table 2).

Table 1: Demographic profile of oligohydramnios and polyhydramnios in singleton pregnancy

Demographic profile	Oligohydramnios group (N=25)	Polyhydramnios group (N=25)	p-value
Age (yrs) Mean±SD	23.78±3.46	28.26±5.37	<0.05*
Gravid (Primi/Multi)	1.87	2.02	>005

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Table 2: Comparison of outcome of pregnancy between polyhydramnios group and Oligohydramnios group

Demographic profile		Oligohydramnios group (N=25)	Polyhydramnios group (N=25)	p-value
APGAR (Mean±SD)		7.63±1.38	6.84±1.73	<0.001*
APGAR at 5 min.	<4	1 (4%)	1 (4%)	<0.05*
	4-7	3 (12%)	6 (24%)	
	>7	21 (84%)	18 (72%)	
Birth weight (Mean±SD) (Kg)		2.28±0.535	2.53±0.67	<0.001**
Meconium staining	Yes	11	7	>0.05
	No	14	17	
Neonatal death	Yes	1	5	<0.05*
	No	24	24	
Postpartum hemorrhage	Yes	0	1	>0.05
	No	25	24	
Respiratory distress	Yes	4 (16%)	8 (32%)	<0.05*
	No	21 (84%)	17 (68%)	
Mode of delivery	Vaginal	9 (36%)	11 (44%)	>0.05
	LSCS	16 (64%)	14 (56%)	
NICU admission	Yes	13 (52%)	10 (40%)	<0.05*
	No	12 (48%)	15 (60%)	
AFI		4.08±1.06	22.56±5.7	<0.0001**

DISCUSSION

Oligohydramnios with AFI ≤5cm can lead to an increase in perinatal mortality and morbidity. Under these conditions, there is increased frequency of meconium-stained liquor, fetal distress, low apgar scores, abnormal fetal heart rates. During the last trimester, the fetus urinates around 30% of its body weight and swallows around 20 to 25% of amniotic fluid each day. The lung also secretes about 10% to amniotic fluid. Any minor inconsistency through the production and swallowing process may lead to polyhydramnios.[7]

Casey & coworkers (2000).[8] conducted a study on pregnancy outcome after diagnosis of oligohydramnios and found that there was an increase in induction of labour (42% over 18%), nonreassuring fetal heart rate patterns (48% vs 39%), NICU admission (7% over 2%), MSAF (1% over 0.1%), neonatal death rate (5% over 0.3%) associated with oligohydramnios.

Youseef et al (1993).[9] conducted a study on measurement of AFI and fetal outcome and found AFI more than 5cm had better chance of predicting a good fetal outcome.

Morris JM et al (2003).[10] assessed fetal outcome in 145 babies with oligohydramnios and found increased incidence of fetal distress, MSAF (29%), IUGR (24.5%), breech (17%), birth asphyxia (11.5%).

Chauhan S P & coworkers (1999).[11] found increased risk of caesarean delivery with antepartum and intrapartum AFI ≤5cm, due to fetal distress and such babies had low apgar score at 5 mins.

Oligohydramnios is commonly encountered, and it necessitates extensive fetal surveillance and perfect antepartum and intrapartum care. Amniotic fluid volume is an important predictor of fetal level of tolerance during labour and its decrease is associated with increased risk of fetal distress and meconium staining of fluid. Due to unforeseen intrapartum complication and high incidence of perinatal mortality and morbidity, caesarean section rates are on the rise, but the decision between caesarean section and vaginal delivery must be well balanced so that unnecessary maternal morbidity could be prevented, and timely decision can reduce perinatal mortality and morbidity. But often oligohydramnios is used as an indication for operative delivery. Hence assessing amniotic fluid volume antenatal is essential in determining high and low risk groups.

The rate of NICU admission was found to be 52%, of which perinatal mortality was 4%. In the study done by Wolff-F.[12], 17% of new-born were referred to nearby paediatric hospital immediately following delivery. This difference may be due to the facilities encountered in the hospital set up. The probable explanations adduced for this include that eating and urinating processes, rather than fetal size, are more engaged in the control of amniotic fluid content.

CONCLUSION

We conclude that oligohydramnios is a high-risk pregnancy and proper antepartum care, intensive fetal surveillance and intrapartum care are required in patient with oligohydramnios. AFI assessment serves as an important tool and remains as an effective screening test in predicting fetal distress in labour that requires cesarean section.

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