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Fetomaternal outcome of oligohydramnios – a clinical study in a tertiary care hospital of Peshawar

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Abstract

Background: Oligohydramnios is a significant cause of maternal morbidity and fetal morbidity and mortality. It has been correlated with high risk of intrauterine growth restriction, meconium aspiration, birth asphyxia, low APGAR and congenital anomalies.

Objective: To determine maternal and fetal outcome in pregnant patients with oligohydramnios.

Methodology: This descriptive cross sectional study was done at Obstetrics and Gynaecology Department of Khyber Teaching Hospital, Peshawar from 1st February 2016 to 31st January 2017. All the women of any age or parity, after 36weeks +6 days period of gestation with oligohydramnios were recruited into the study after satisfying the inclusion and exclusion criteria. Oligohydramnios was confirmed by doing amniotic fluid index (AFI).

Results:The incidence of oligohydramnios was 3.8%. 391(66%) cases were 21-30 years age and 325(55%) were primigravidas.314(53%) presented at 39-40 weeks +6 days period of gestation. Anemia was present in 183(31%) subjects, pregnancy induced hypertension in 154(26%) and postdatism in 106(18%) cases. 249(42%) had cesarean section whereas 343(58%) ended in vaginal delivery. Incidence of congenital anomalies was in 53(9%) patients, with renal anomalies being most common. 545(92%) babies were alive and 47(8%) were still borns. 183(31%) neonates needed NICU care, 95(16%) had APGAR <7 at five minutes and 59(10%) were growth restricted.

Conclusion:Oligo-hydramnios is a frequent condition and requires good fetal surveillance and appropriate ante-natal and intra-partum care. Due to high rates of intrapartum complications and perinatal morbidity and mortality, cesarean section is becoming favored mode of delivery but the decision should be consultant laden and well balanced.

Keywords:Oligo-hydramnios, fetal outcome, maternal outcome, amniotic fluid index, deepest vertical pocket, post-dates.

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Introduction:

Fetus requires a floating bed of amniotic fluid in which it can grow, regulate its temperature, escapes any type of external injury and the effect of uterine contractions.[1] The amniotic fluid volume is an indicator of fetal well being in general practice and its assessment is an important part of antenatal fetal surveillance.[2]

Oligohydramnios is defined as "amniotic fluid index of < 5 or the largest vertical pocket measuring < 2cm". It is a risk factor as well as indicator of poor fetal status and maternal comorbidities.[3] The sequal from long standing oligo-hydramnios is intrauterine growth restriction, pulmonary hypoplasia, Potter's syndrome, club foot, club hand and dislocation of hip.[4] Compression of umbilical cord between the fetus and wall of uterus can happen during uterine contraction or fetal motion which can lead to severe fetal heart rate decelerations which are associated with low APGAR scores and fetal acidosis at delivery, meconium staining of amniotic fluid, birth asphyxia and more risk of cesarean section and operative vaginal delivery for fetal distress.[5] The more recent research has revealed

that AFI < 5cm has 2-fold raised risk of cesarean section for fetal distress and 5-fold increase risk of APGAR score < 7 at 5 minutes compared with patients having normal volume of amniotic fluid.[6]

Oligo-hydramnios also has high maternal morbidity because of increased rates of induction or cesarean section, both of which have their own risks.[7] Early detection of oligo-hydramnios and its management may help in reduction of perinatal morbidity and mortality on one side and decreased cesarean section risk on the other side.[8]

The findings of oligo-hydramnios can be a sequel to utero-placental insufficiency, post dated pregnancy, long standing hematomas in placenta, premature rupture of membranes and maternal ailments like pregnancy induced or chronic hypertension, preeclampsia, history of drug intake etc.[9]

The aim of our study is analysis of maternal and fetal outcome of oligo-hydramnios, as it has got significant impact on fetal morbidity and mortality and maternal morbidity, and provide a database to clinicians to formulate better management plans for this condition.

Materials and methods:

This descriptive cross sectional study was conducted at Gynaecology and Obstetrics Department of Khyber Teaching Hospital, Peshawar from 1st February 2016 to 31st January 2017. A total of 592 patients presented in this study period in their third trimester with oligohydramnios after both the inclusion and exclusion criteria were fulfilled. Inclusion criteria was ante-natal patients of any age or parity with period of gestation more than 36 weeks +6 days, with singleton pregnancy, ultrasonographic evidence of oligohydramnios but no history of premature/prelabor rupture of membranes and intact membranes on pelvic examination. Exclusion criteria was antenatal patients with cardiac disease, multiple pregnancy, normal or increased amount of liquor on scan, previous one or more cesareans and those with premature/prelabor rupture of membranes.

Prior approval was taken from hospital ethical committee and written informed consent was taken from patients after explaining them the purpose of study. Patients were admitted via out patient department, antenatal clinic and labor room. Detailed history and thorough general physical, abdominal and vaginal examination was done. Investigations were sent to hospital laboratory and followed. Ultrasound was done to confirm AFI. AFI of < 5cm was considered oligo-hydramnios. Left lateral position, rest, encouragement of oral fluids and intravenous hydration was advised and control of the causative factor done, if any. Fetal monitoring done by sonogram, biophysical profile, and doppler. Decision of delivery by either induction or cesarean was taken in accordance with unit protocol. The patients already in labor were followed and maternal and fetal status reassured with the help of partogram. Those where induction was decided, were induced with prostaglandin E_2, and strict monitoring done. Caes were then studied in detail for maternal and fetal outcome.

Outcome was observed in the form of effects on fetus like prevalence of different congenital anomalies in fetus, admissions in neontal intensive care unit, still births, babies with five minute APGAR score < 7 and growth restriction. Mothers were followed for the aetiological factor, mode of delivery, age distribution, gravidity and gestational age at which they presented.

Data was analyzed with SPSS version 20.0. Mean and standard deviation was calculated for numerical variables and frequency and percentages were calculated for categorical variables. Data was presented in the form of tables.

Results:

Oligo-hydramnios was detected in 592 patients so the incidence was found to be 3.8%. Four age groups of all women were formed and subjects allocated to each group. 30(5%) were less than 20 years age, 391(66%) fell into age group of 21-30 years, 136(23%) subjects were 31-40 years and 35(6%) were more than 40 years age.

Regarding the gestational age at presentation,

Table 1: *Maternal conditions associated with oligohydramnios*

Maternal condition	Frequency	Percentage
Anemia	183	31%
Pregnancy Induced Hypertension	154	26%
Postdates	106	18%
Preeclampsia	53	9%
Eclampsia	6	1%
Chronic Kidney Disease	6	1%
Placental hematomas	3	0.5%

Table 2: *Fetal congenital anomalies associated with oligohydramnios*

Congenital anomaly	Frequency	Percentage
Hydronephrosis/hydroureter	23	3.8%
Renal agenesis	12	2%
Polycystic Kidney Disease	6	1%
Pulmonary Hypoplasia	6	1%
Posterior Urethral Valves	3	0.5%
Hydrocephalus	3	0.5%
Amniotic Bands	3	0.5%

Table 3: *Fetal outcome*

Fetal outcome variable	Frequency	Percentage
Alive	545	92%
NICU admissions	183	31%
APGAR score < 7	95	16%
Intrauterine Growth Restriction	59	10%
Stillbirths	47	8%

189(32%) presented in gestational age of 37 to 38 weeks + 6 days. 314(58%) Were in gestation 39-40 weeks +6 days and 89(15%) patients were 41–42weeks +6 days period of gestation. Among 325(55%) were primigravidas, 148(25%) were multigravidas and 118(20%) were grand multigravidas.

The different maternal conditions associated with oligo-hydramnios are post dates, pregnancy induced hypertension, preeclampsia and anemia in majority of cases. The frequency and percentages of these conditions are documented in Table no. I.

Mode of delivery was cesarean section in 249(42%) and vaginal delivery in 343(58%)

Incidence of congenital anomalies in oligo-hydramnios was 53(9%). The most common anomaly observed was related to urinary system. Other anomalies with frequencies and percentages are presented in Table No.II.

Fetal outcome was observed as 545(92%) neonates were alive and 47(8%) were still borns. 183(31%) Babies were admitted in NICU after delivery, 95(16%) had APGAR score of less than 7 at five minutes,and59(10%) were growth restricted.(Table no.III)

Discussion:

Oligo-hydramnios is associated with high maternal and perinatal morbidity and mortality. Its management remains a dilemma for the obstetricians owing to the risks to fetus on one side and operative complications and risks of continuation of pregnancy in certain medical disorders in the mother on other side. Our various outcome results were close to the studies done by different authors at different places.

The incidence of oligo-hydramnios in our study was 3.8% which on one hand is supported by the worldwide range of 0.5 – 5% and on other hand by an Indian study at Madya Pradesh where 3% incidence of oligohydramnios was observed.[2]

Regarding the maternal risk factors associated with oligo-hydramnios, anemia was on the top (31%) followed by hypertensive disorders of pregnancy and post dated pregnancies. Hypertensive disorders lead to uteroplacental insufficiency causing oligohydramnios. Bansal D in their study in 2015 reported anemia to be responsible for 55% cases of oligo-hydramnios.[2] Jagathia K et al in their 100 cases studies of oligo-hydramnios reported pregnancy induced hypertension in 26% cases 8 which supports our findings, Chandra et al reports 38.46% cases of their study and Sriya et al concluded 31% cases of theirs due to pregnancy induced hypertension.[11,12] Post-dated pregnancy being present in 18% of our study population was responsible for causing oligo-hydramnios in 11.5% subjects in study by Marks AD et al[10] and for 20% cases in another study.[8] There is physiological reduction in amount of amniotic fluid after 40 weeks gestation.

Fetal congenital anomalies occurred in 9% of

our babies. Shetty et al reported 5.8% of their study population had fetal congenital anomalies,[13] whereas they were found in 11% and 8.5% in studies done by Golan et al and Guin et al .[14,15] The most common of all the congenital abnormalities observed was those of the renal system which occurred in 3.8% cases. Our findings correspond with those of Bansal D who observed this anomaly in 4.5% of their babies.[2]

Primi-gravidas comprised of 55% of our subjects, just like the reports of a study at Gujrat, India who observed 52% of their cases being primi-gravidas.[8] The same supported ours in regard to age distribution as 90% of their subjects were 20 – 30 years age, corresponding to ours where this age group was comprising majority of our subjects(66%). We did lower segment cesarean section in 42% of our cases, same findings were observed by Guin et al.[15] Ashwal et al did cesarean section in 28% of their subjects[16] and on the contrary, 64% of subjects in study done by Chate et al ended in cesarean section.[17]

Coming to the fetal outcome of oligo-hydramnios, 31% of our babies were sent to neonatal intensive care unit after delivery. Looking at the variation in the international studies like 7% babies in two studies by Casey et al and Umber A et al[18,19] were admitted in NICU whereas 88.88% neonates in study by Sriya L et al[12] were sent to nursery depicts that the NICU admissions in different studies at different places may reflect the different thresholds of Paediatricians and level of nursey care in that places. 16% of our neonates had APGAR score of less than 7 at five minutes. Chate P et al in their study reported same proportion of neonates with this APGAR[17] whereas 20% figure was observed by Patel PK et al.[20] 10% of our babies were growth restricted, opposed to 36% in the study conducted by Umber A et al[19] and 5% in that of Patel et al.[20] We observed 8% of our neonates were delivered as still births, supported by the study of Wolff et al who reported 7.2% and Apel-sarid L et al who reported 9.9% of their babies as still births.[21,22]

There were several limitations in our study.First, oligo-hydramnios was diagnosed on the basis of AFI. Recent data are now arguing that the deepest vertical pocket is perhaps a better choice for diagnosis carrying low false positive rates. Secondly, babies were followed only till their discharge from the hospital. A long term follow up might have revealed other congenital anomalies which remained un-diagnosed at time of discharge. Thirdly, only Khyber Teaching Hospital was taken as the study place. Inclusion of other hospitals from the same locality could have given better idea about the outcome of the condition in that area.

Conclusion:
Oligo-hydramnios is a frequently occurring condition and requires good fetal surveillance and appropriate antenatal and intrapartum care. Due to intrapartum complications and high perinatal mortality and morbidity rates, cesarean section is being considered more as the favored mode of delivery. Decision between cesarean and vaginal delivery should be consultant laden and well balanced so that unnecessary maternal morbidity prevented.

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Role and contribution of authors:
Dr. Maimoona Qadir, Registrar, Gynae C Unit, Khyber teaching Hospital, Peshawar, collected the data wrote the initial writeup

Dr. Sohail Amir, Assistant Professor, Neurosurgery, Naseer Teaching Hospital, Peshawar, critically review the article and made the necessary changes.

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