Research Article

Clinical Study to Evaluate Prevalence of Congenital Anomalies in Polyhydramnios

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ABSTRACT

Polyhydramnios is defined as excessive accumulation of amniotic fluid in relation to gestational age usually more than 2000 ml.1More recently when Amniotic Fluid Index is more than 95th and 97th percentile for the gestational age condition is called as polyhydramnios.2 It is frequently associated with congenital anomalies of the fetus. The aim of our study was to observe prevalence of congenital anomalies in polyhydramnios. The present study was carried out in the department of Obstetrics and Gynaecology Umaid Hospital attached to Dr. S. N. Medical College, Jodhpur. In this study patients of polyhydramnios with gestational age between 20 to 42 weeks with amniotic fluid index more than 24 were enrolled after taking informed written consent. Degree of polyhydramnios was graded as mild, moderate and severe. Detail study of fetus was done for possible congenital anomalies. Congenital anomalies were confirmed with post-natal findings. There were 196 pregnant women with amniotic fluid index (AFI) > 24 cm. Prevalence of polyhydramnios was 1.66%. Congenital anomalies were present in 16.84% out of total 196 cases of polyhydroamnios. In pregnant women with severe polyhydramnios 51.51 % and in moderate 45.45% had congenital anomalies. Most common congenital anomaly was anencephaly (3.57%) followed by Hydrops (3.57%), Central nervous system, gastrointestinal and skeletal anomalies. Polyhydramnios is associated with increased risk of congenital anomalies hence Intrauterine condition of fetus should be monitored by using various diagnostic facilities like USG, Doppler, Echo-cardiography, amniocentesis and cordocentesis for possible congenital anomalies.

Keywords: Polyhydramnios, Congenital Malformation, Prevalence.

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INTRODUCTION

The amniotic fluid is required for the proper growth and development of the fetus. Polyhydramnios, which is an increased amount of amniotic fluid, complicates approximately 1–2% of all pregnancies[3,4]. The diagnosis is made by ultrasound finding of the amniotic fluid index (AFI) > 24 cm or the maximal amniotic pocket > 8 cm. Sources of Amniotic Fluid: A) Fetal**:** Active secretion from amniotic epithelium, Transudate from fetal circulation, Fetal urine, Fetal respiratory tract secretion. B) Maternal : Transudate from Maternal circulation. It may be associated with adverse fetal and maternal outcome. Fetal congenital anomalies are among the most frequent causes of polyhydramnios, including gastrointestinal tract anomalies, central nervous system defects, musculoskeletal anomalies, etc. Congenital anomalies were most frequently found in pregnancies complicated by severe polyhydramnios. The aim of this study was to find the association between polyhydramnios and congenital malformations in pregnant women of western Rajasthan.

MATERIALS AND METHODS

This prospective observational study was conducted in the department of Gynaecology and obstetrics Umaid Hospital Jodhpur Rajasthan between June 2016 to November 2016. The study includes patients of polyhydramnios with gestational age between 20 to 42 weeks with amniotic fluid index more than 24.A thorough obstetric ultrasound examination was done using a linear or curvilinear transducer of 3.5-5 MHz. Uterus was divided into four imaginary quadrants. Measurement was done in the pocket free of fetal limbs and umbilical cord. All patients were divided into three groups based on the value of AFI: 1) mild polyhydramnios with AFI between 24.1 and 30.0 cm, 2) moderate polyhydramnios with AFI between 30.1 and 35 cm, and 3) severe polyhydramnios with AFI ≥ 36 cm. Women with gestational age <20 week and >42 week were excluded. Detailed anomaly scan was done to look for congenital malformations. All the pregnant women were observed till delivery. Detailed physical examination of new born babies were done and evaluated for congenital malformation.

Prior approval from the ethical committee was done.

RESULTS

There were 196 patients with amniotic fluid index (AFI) of >24 cm during the study period. Total deliveries during that period were 11771. So, the prevalence of polyhydramnios was 1.66%. Most of the ladies were in the age group of 20-30 years.

Table 1: Distribution of cases according to demographic and obstetric parameters

S.No.	Type	No. of cases	Percentage
1.	Booked	95	48.5%
2.	Unbooked	101	51.5%
3.	G1	63	32.14%
4.	G2-G3	100	51.02%
5.	G4-G5	24	12.24%
6.	>G5	9	4.6%

Above tables 1 depicts that about 48.5% cases were booked and 51.5% cases were unbooked, however majority of the cases were multigravida (67.86%) and 32.14% were primigravida.

Table 2: Distribution of pregnant women according to gestational age

S. No.	Gestational age	No. of cases	Percentage (%)
1.	<28 weeks	9	4.6%
2.	28-32 weeks	19	9.69%
3.	33-36 weeks	64	32.65%
4.	37-40 weeks	99	50.51%
5.	Postdated (>40 weeks)	5	2.55%

Most of the cases were (table 2) presented at gestational age of 37-40 weeks (50.51%) followed by 33-36 weeks (32.65%), 28-32 weeks (9.69%) and less common below 28 weeks (4.6%).

According above table 3 majority of cases were mild polyhydramnios (56.63%) followed by moderate polyhydramnios (31.63%) and severe polyhydramnios (11.73%).

Table 3: Distribution of cases according to Amniotic Fluid Index

S. No.	AFI in cms (grade of polyhydramnios)	No. of cases	Percentage (%)
1.	24.1-30cm (Mild polyhydramnios)	111	56.63%
2.	30.1-35cms (Moderate polyhydramnios)	62	31.63%
3.	36cm or more (Severe polyhydramnios)	23	11.73%

Table 4: Type of congenital anomalies and its Correlation with severity of polyhydramnios

Type	No. of cases	% (out of 196 cases)	Mild	moderate	Severe
Anencephaly	7	3.57	0	4	3
Hydrocephalus	2	1.02	1	1	0
Nonimmune Hydrops Foetalis	3	1.5	0	1	2
Hydrops Foetalis	4	2.04	0	1	3
Meningomyelocele+Spina bifida	1	0.51	0	0	1
Tracheo Oesophageal fistula	2	1.02	0	0	2
Meningocele	1	0.51	0	1	0
Congenital heart disease	2	1.02	0	1	1
Meningocele+Duodenal atresia	1	0.51	0	0	1
Club foot	1	0.51	0	1	0
Duodenal atresia	2	1.02	0	0	2
Posterior urethral valve	2	1.02	0	2	0
Nonimmune Hydrops Foetalis +Skeletal dysplasia	1	0.51	0	1	0
Meningocele+Hydrocephalus+B/l Club foot	1	0.51	0	1	0
Small intestinal atresia	1	0.51	0	1	0
Hydrocephalus+Gonadal cyst	1	0.51	0	0	1
Alobar Holoprosencephly	1	0.51	0	0	1
	33 (16.83% of Total)		1	15	17

Table 4 shows that most common congenital anomaly was anencephaly (3.57%) followed by hydrops and gastrointestinal tract anomaly. Most of the congenital anomalies were associated with severe polyhydramnios followed by moderate polyhydramnios.

DISCUSSION

This was a prospective observational type of study**.** Total no. of deliveries during the study period of 6 months was 11771. Out of this 196 women were diagnosed as case of polyhydramnios.

Prevalence of polyhydramnios was 1.66% which was close to studies by Singh Richa et al (2013)[11], Maliha Sadaf et al (2013)[15], Dr. Neetu Meena et al (2016)[8]**.** Slight variation of incidence in different studies is due to demographic differences, different diagnostic criteria and interobserver variation. In present study (table no. 1) both booked (48.56%) and unbooked (51.5%) are equal or less to different studies by Patel A et al (2015)[14], Sudha Chourasia et al (2013)[10]. Variation in incidence may be due to different criteria of booking at different center. Results of present study were similar to studies by Sudha Chourasia et al (2013)[10], Dr. Neetu Meena et al (2016)[8]. With increasing maternal age and gravidity there are more chances of nutritional deficiency, diabetes, aneuploidy, multiple gestation and fetal congenital malformation which itself increase the chances of polyhydramnios.

In our study (table no. 2) majority of cases belonged to a age group 20-30 years and gestational age beyond 37 weeks results of study were similar to studies by Dr. Neetu Meena et al (2016)[8], Rajgire et al (2016)[5], Patel A et al (2015)[14]. Because chronic polyhydramnios develops gradually and it takes several weeks to develop, so it usually makes its appearance in third trimester and most of the cases admitted in hospital at term. The findings of our study (table no. 3) were identical to studies done by Anisa Fawad et al (2008)[9], Sadia Tariq et al (2010)[13], and Singh Richa et al (2013)[11], Gupta P et al (2016)[12]**.** Incidence of severe polyhydramnios was low compared to mild polyhydramnios and this is explained by that severe polyhydramnios is more common in fetus with congenital anomaly mainly CNS, GIT and their incidence is itself low.In present study incidence of congenital anomalies was 16.84% and results were similar to studies by R.William Quinlan et al(1983), Desmedt EJ et al (1990)[7], Sudha Choursia et al (2013)[10] and Singh Richa et al (2013)[11]. Various environmental and maternal factor responsible for congenital anomaly include dietary factor (folic acid deficiency), intrauterine infection (TORCH etc.), maternal disease complicated by pregnancy (diabetes and heart disease), advanced maternal age, irradiation etc.

Type of congenital anomalies (out of total cases of polyhydramnios)

Study	Anencephly	Hydrocephalus	G.I.T. anomaly	Hydrops	Skeletal	Cardiac	Meningocele
Bukinghum et al (1960)	7%	**1.2%**	**3.5%**	**2.5%**	--	--	--
Anisa Fawad et al (2008)	17.14%	2.85%	**2.85%**	--	--	5.75%	--
Singh Richa et al (2013)	9.3%	--	6.25%	--	**1.56%**	**--**	**1.56%**
Sudha Chourasia et al (2013)	11%	**1.8%**	0.9%	--	2.7%	--	0.9%
Anil shetty et al (2013)	**3.44%**	--	**3.44%**	6.88%	3.44%	--	--
Rajgire AA et al (2016)	**3.3%**	**1.6%**	6.6%	--	11.6%	5%	-
Dr.Neetu Meena et al (2016)	8%	3%	7%	6%	4%	--	**3%**
Present study (2016)	**3.57%**	**1.5%**	**3.06%**	**3.57%**	**1.02%**	**1.02%**	**2.04%**

In present study (table no.4) 3.57% cases were of anencephly results were similar to studies by Anil Shetty et al (2013)[6] and Rajgire AA et al (2016)[5]. 1.5% cases were of hydrocephalus similar to studies by Sudha Chourasia et al (2013)[10] and Rajgire AA et al (2016)[5].In the present study GIT anomaly was found in 3.06%, similar to studies by Anil shetty et al (2013)[6] and Anisa Fawad et al (2008)[9].In present study 3.57% cases were of Hydrops (NIHF 1.5% and Hydrops fetalis 2.0%), results similar to study by Bukinghum et al (1960) and 2.04% cases were of Meningocele, results similar to studies by Singh Richa et al (2013)[11] and Dr. Neetu Meena et al (2016)[8]. All above mentioned studies shows that major congenital anomaly was neural tube defect followed by GIT. Dietary (folic acid deficiency) and uncontrolled diabetes are main features responsible for these anomalies. In contrast to this, cardiac anomalies were most frequently associated with polyhydramnios. Central nervous system, Gastrointestinal and skeletal anomalies are among the highest in the present study.

CONCLUSION

Polyhydramnios is **"HIGH RISK PREGNANCY"** associated with adverse fetal outcome and maternal complications. Detail anomaly scan is necessary in all ANC patients. The study gives us the understanding of the impact of polyhydramnios on the mother & fetus which can be managed effectively if diagnosed earlier & followed up regularly. Identification of etiological factors helps in satisfactory counseling of parents regarding fetal prognosis, recurrence risk, different managements options ranging from medical to surgical. Intrauterine status of fetus can be confidently assessed by using various diagnostic facilities like USG, Doppler, Echo-cardiography, amniocentesis and cordocentesis.

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