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Frequency of Congenital Anomalies in Polyhydramnios and Their Relation to Its Severity

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Abstract: The aims of our study were to assess the correlation between the amniotic fluid index (AFI) value and the frequency and type of fetal anomalies. The material included 50patients at or beyond 28 weeks of gestation with AFI≥25, among them 34 diagnosed with mild polyhydramnios, 14 with moderate one, and 2 with severe one. Polyhydramnios was diagnosed if AFI was ≥25 cm. All patients were divided into three groups based on the value of AFI: 1) mild polyhydramnios with AFI between 25 and 29.9 cm, 2) moderate polyhydramnios with AFI between 30–34.9 cm, and 3) severe polyhydramnios with AFI ≥ 35 cm. The incidence of fetal malformations correlated significantly with the degree of polyhydramnios and was the highest in patients with severe polyhydramnios (100%). Congenital malformations of the gastrointestinal tract were the most frequent fetal anomalies in the whole group of patients (50%). Conclusions: 1. the incidence of fetal congenital anomalies significantly increases with the degree of polyhydramnios, being most frequent in severe one and rather rare in a mild one. 2. Congenital malformations of the gastrointestinal tract were the most frequent anomalies in patients with polyhydramnios, especially in women with severe polyhydramnios.

Keywords: fetal anomalies, congenital anomalies, polyhydramnios.

INTRODUCTION

Polyhydramnios, which is an increased amount of amniotic fluid, complicates approximately 1–2% of all pregnancies [1, 2].

Fetal congenital anomalies are among the most frequent causes of polyhydramnios, including gastrointestinal tract anomalies, central nervous system defects, musculoskeletal anomalies, airway malformation and congenital diaphragmatic hernia (CDH) [3]. It seems that not only the finding of polyhydramnios, but also the value of AFI have a significant effect on a fetal and neonatal outcome, including the frequency of birth defects [3, 4]. Congenital anomalies were most frequently found in pregnancies complicated by severe polyhydramnios [4].

OBJECTIVE

The main aim of our study was to assess the correlation between the AFI value and the frequency of fetal anomalies. The second aim was to analyse the type of malformations and its association with the degree of polyhydramnios.

MATERIALS AND METHODS

The present prospective study was conducted in the Department of Obstetrics and Gynaecology at Zenana Hospital, SMS Medical College, and Jaipur on 100 study subjects attending antenatal clinic at or beyond 28 wks of gestation. These 100 cases were recruited on the basis of inclusion and exclusion criteria with written and informed consent. A detailed medical and obstetric history taken. Routine antenatal investigations (CBC, ABORh, PG 2hr, HBsAg, VDRL, Urine) done for each subject. Then AFI for each subject determined using four quadrant techniques in USG. Two groups were made - case group and control group. Pregnant women with AFI ≥25 were allocated to case group and pregnant women with normal AFI were allocated to control group. In case group subjects were graded into mild, moderate and severe on the basis of AFI: 1) mild polyhydramnios with AFI between 25and 29.9 cm, 2) moderate polyhydramnios with AFI between 30 and

34.9 cm, and 3) severe polyhydramnios with AFI ≥ 35 cm. The material included 50patients, 34 with mild polyhydramnios, 14 with moderate one, and 2 with severe one. Perinatal outcomes for neonates were noted by estimating fetal weight, APGAR scores at one minute and at five minutes, congenital malformations, NICU admission and neonatal deaths.

STATISTICAL ANALYSIS

Continuous variables were summarised as mean and SD while nominal / categorical variable as percentage unpaired't' test was used for continuous variables and $\chi 2$ for nominal / categorical variables. P-value < 0.05 was taken as significant. Med Calc 122.1.0 version software was used for statistical analysis.

RESULTS

Median AFI value in case group was 29 with AFI value ranging between 26-36. Patients were classified as mild, moderate, and severe according to AFI value. 34 (68%) patients in case group were having mild polyhydramnios (AFI = 25-29.9), 14 (28%) patients were having moderate polyhydramnios (AFI = 30-34.9) and 2 (4%) patients were having severe polyhydramnios (AFI ≥35).

Table-1: Distribution According to AFI

USG (AFI)	Cases	Controls	p-value
Sample Size	50	50	<0.0001
Mean ± SD	29.04 ± 2.58	13 ± 2.69	
Median	29	13.5	
Min-Max	26 – 36	2 - 16	
Inter Quartile Range	27 – 30	12 - 14	

Maternal baseline characteristics and gestational age at ultrasound were similar in both groups. Mathew M *et al*. [5] conducted a study about polyhydramnios risk factor and outcome. Polyhydramnios was divided into mild, moderate and severe based on the AFI values. Polyhydramnios was mild in 179 (86.1%), moderate to severe in 29 (13.9%) cases.

The general frequency of fetal anomalies in the studied of patients with polyhydramnios was 16% including 2.9% (1 in 34) in patients with mild polyhydramnios, 35% (5 in 14) in patients with moderate polyhydramnios and 100% (2 in 2) in patients with severe polyhydramnios. The incidence of fetal malformations correlated significantly with the degree of polyhydramnios (p = 0.006).

Among the cases, the general frequency of fetal CNS system and GI system anomalies were 25% (2 out of 8) and 50% (4 out of 8) respectively. Fetal malformations other than malformations of CNS or GIT were found in 25% (2 out of 8).

Table-2: Distribution According to Congenital Anomaly

CNS Anomalies	GI Anomalies	Others
Anencephaly-1 Hydrocephalus-1	Esophageal Atresia-1 Tracheo-esophageal Fistula-1 Omphalocele-1 Congenital Diaphragmatic Hernia -1	Tetralogy of Fallot-1 Cleft lip &palate-1

Mathew M *et al*. [5] conducted a prospective study to determine risk factors and outcome of polyhydramnios and found that major congenital anomalies were found in 2.8% compared to 1% among the controls.

In the present study, 4 cases were diagnosed with congenital anomaly postnatally which we missed on antenatal scans. In a study by Abele H *et al*. [6], it was concluded that in about 40% of pregnancies, polyhydramnios remains unexplained during the course of pregnancy and in 10% of the cases on anomaly will be found only after birth.

CONCLUSIONS

The incidence of fetal congenital anomalies significantly increases with the degree of polyhydramnios, being most frequent in severe one and rather rare in a mild one. Congenital malformations of the gastrointestinal tract are the most frequent congenital anomalies in patients with polyhydramnios; especially in women with severe polyhydramnio Polyhydramnios is associated with a quite high incidence of fetal CDH and skeletal dysplasia and a very low frequency of congenital infections. The precise measurement of AFI is important because indicates on high or low risk of a presence of fetal congenital malformations what is crucial when counselling the patients.

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