E:/Biomedica Vol.22 Jan. – Jun. 2006/Bio-11a (A)

INCREASING SEVERITY OF POLYHYDRAMNIOS – A RISK FACTOR FOR CONGENITAL MALFORMATION

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This study was carried out to know the frequency of fetal anomalies in pregnancy complicated by polyhydramnios. The place of this work was Obstetrics & Gynaecology, Unit-III Lady Willingdon Hospital, Lahore. The study period was from 1st May to 31st Dec. 2005. Sixty consecutive patients with polyhydramnios were included in the study. Amniotic fluid volume was calculated by measuring amniotic fluid index (AFI) through ultrasound and type of fetal anomaly was also diagnosed on ultrasonography. Our results depicted that there were 22(61.2%) normal fetuses with mild polyhydramnios (AFI 24 to 29.9cm) whereas in severe polyhydramnios (AFI 35 cm or more) all fetuses (100%) had congenital malformations. It was thus concluded from this study that increasing severity of polyhydramnios is associated with increasing frequency of fetal anomalies.

INTRODUCTION

The amniotic fluid is of both maternal and faetal origin[1]. Its volume is controlled by dynamic interactions among the faetal, placental and maternal compartments[2]. Throughout normal pregnancy, the amniotic fluid allows the faetus room for growth, movement and development. It protects the faetus from sudden jerks and serves as a cushion. In polyhydramnios this equilibrium shifts so that the net transfer of water is into the amniotic sac[3]. This polyhydramnios is often indicative of faetal, placental or maternal problem. It occurs in about 1% of pregnancy[4]. Polyhydramnios is defined as Deepest Vertical Pool (DP) more or equal than 8cm[5] or Amniotic Fluid Index (AFI) of equal or more than 24 cm[6] or AFI above the 95th Centile for gestational age.

AFI is determined by directly measuring the vertical pocket (free of any faetal part) in four quadrants of abdomen in a pregnant woman[7]. Polyhydramnios is ranked as mid, moderate or severe according to AFI 24.0-29.9cm, 30.0-34.9 cm and 35.0cm or more respectively[8]. There is dominant role of anomalous faetal development in the production of polyhydramnios but discrepancy still exists regarding the reported frequency of anomalies among faetuses from pregnancies complicated by polyhydramnios[9]. This disparity is due to cut off level for establishing polyhdramnios. It is observed that with increasing severity of polyhydramnios, percentage of anomalous faetus increases[10].

The aim of this study was to find out frequency of anomalies in pregnancies complicated by polyhydramnios.

PATIENTS AND METHODS

Sixty patients with single or multiple pregnancies from 20-42 weeks of gestation and ultrasound diagnosis of polyhydramnios (AFI equal or more than 24.0cm) were included in the study. Those patients with normal AFI and oligohydramnios were excluded. Their age, parity, gestational age at the time of presentation and maternal risk factors were analysed. Informations regarding faetus (normal or abnormal) placenta and amniotic fluid were collected with the help of ultrasound scan. Amniotic fluid index was calculated by measuring the sum of amniotic fluid pockets devoid of any faetal parts or cord in the four quardrants of amniotic sac. Patients were categorized as mid, moderate and severe depending upon AFI. Association of faetal anomalies with increasing severity of polyhydramnios was defined. Data was analysed and tests of significance were applied.

RESULTS

In this study there were 14 (23%) patients booked and 46 (77%) non booked. Age of 31 mothers (51%) ranged from 30-39 years and 6 (10%) patients were more than 40 years. Twenty two (36.6%) mothers were diabetic. Table 1 shows that maximum number of (28) patients presented between 28-36 weeks of pregnancy.

In a total of 60 mothers, 27 (45%) had normal faetuses whereas 33 (55%) had anomalous faetuses (Table 2). Total anomalies were 43. 23, out of these 33 (69.6%) anomalous faetuses had single anomaly. Ten of 33 (30%) faetuses manifested multiple anomalies. Among different organ system involved 21 of 43 (48.8%) showed central nervous

system (CNS) involvement, (anencephaly 9, hydrocephalous 5, meningocele 3, spinabifida 4), 9 (21%) patients had gastrointestinal (GIT), 9 (21%) had hydrops faetalis, 2 (4.6%) patients had skeletal systems lesion 2 (4.6%) had cardiovascular system (CVS) involvement (Table 3), and 6 (18.1%) faetuses had intrauterine death. In mild polyhydramnios (AFI 24-29.9cm) 14 (38.8%) out of 36 manifested an anomaly, whereas moderate polyhydramnios (AFI 30.0-34.9cm) carried risk of 77.2% (17 of 22) for anomaly. Severe polyhydramnios carried risk of 100% for anomaly (Table 4).

Table 1: *Gestation at Presentation.*

Weeks	Number of Cases
20-27	10
28-36	28
37-42	22

Table 2: *Number of normal and anomalous faetuses.*

Fetuses	Number	Percentage
Normal	27	45
Anomalous	33	55

Table 3: Different Systems involved

Organ System involved	Number	Percentage
CNS	21	48.8
GIT	9	21.0
Hydrops faetalis	9	21.0
Skeletal system	2	4.6
CVS	2	4.6

Table-4: *Association of fetal anomalies with increasing severity of polyhydramnios.*

Polyhydramnios	No of patients	Normal faetuses	Percentage	Anomalous faetuses	Percentage
Mild (AFI 24.0-29.9cm)	36	22	61.2	14	38.8
Moderate (AFI 30.0.34.9cm)	22	5	22.8	17	77.2
Severe (35.0 cm or more)	2	0	0	2	100

DISCUSSION

There is a general agreement that with increasing severity of polyhydramnios, percentage of anomalous faetuses increases[10]. This study demonstrates that frequency of anomalies in faetuses increases proportionately to the degree of polyhydramnios. Lazebnic N in his study reported similar results[10]. Dameto et al reported similar results but amniotic fluid volume was measured according to deepest vertical pool (DP). In this study amniotic fluid index (AFI) was used for measurement of amniotic fluid volume. AFI is preferred to DP because DP does not allow for an asymmetrical faetal position within the uterus. Also, regression curve between AFI and gestational age is similar in shape to that between amniotic fluid volume and gestational age[12]. The maximum number of cases presented at the gestation of 28-36 weeks. In a study by Brantberg A et al, it was seen that faetal malformations associated with polyhydramnios were detected at maximum gestation of 29 weeks[13]. High number of patients in last week of gestation shows that most of the patients presented to hospital quite late.

Thirty percent of faetuses manifested multiple anomalies in this study whereas in a study by Stoll et al 41% of the faetuses had more than one malformations[14]. CNS anomalies were largest group i.e., 21(48.8%) among 43 anomalies, in review of polyhydramnios by Cardwell, found 50% CNS defects associated with polyhydramnios[3]. In this study, therefore 22 (61.2%) normal faetuses in mild polyhydramnios, where as in severe polyhydramnios, all fetuses (100%) had congenital malformations (Table 4). Our results were comparable to a study by Barkin et al[15]. Esplin et al in his study found that polyhydramnios is associated with increased frequency of congenital anomalies in faetuses, therefore, they recommend that diagnosis of mid trimester polyhydramnios should

initiate a search for possible associated faetal anomalies[16].

This study **concludes** that increasing severity of polyhydramnios as determined by appropriate sonographic criteria is associated with increasing frequency of faetal anomalies.

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