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Anatomy

A STUDY ON CONGENITAL MALFORMATIONS IN FETUSES BASED ON MATERNAL PARITY

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ABSTRACT

Aims and Objectives: Assess the association of the various congenital malformations based on birth order of the fetus & to analyse the factors responsible.

Materials and Methods: Foetuses of pregnant women attending government hospitals in Hyderabad during the a period of one year from October 2011 to September 2012.They were screened through ultrasonographic evaluation in the second trimester (12wks to 28wks) for congenital anomalies

Results: The congenital anomalies are seen more affecting primi parous women in our study

Conclusion: congenital anomalies are more commonly seen in primiparous women & to prevent them more focus should be laid on maternal education, pre-marital councelling,antenatal care, supplementation with folic acid, prenatal ultrasonography & genetic studies in at-risk individuals.

KEYWORDS : congenital anomalies, fetal birth order, maternal parity, prenatal ultrasonography

Introduction:

Congenital anomalies are defined as conditions that result in a malformation, deformation or disruption in one or more parts of the body which are present at birth and can have a serious adverse affect on health, development or functional ability of the individual.

With the development of science and with advanced screening techniques, in modern era the task of identifying the causative factors, and early detection of congenital malformations has become easier. Congenital malformations not only affects the diseased but also extends to many at risk individuals as well as to their families and adds to the socio-economic burden of the society.

Materials and Methods:

The present study was done on congenital malformations occurring in foetuses of pregnant women who attended two Government Maternity Hospitals in Hyderabad for antenatal checkup, during a period of one year from October 2011 to September 2012 Foetuses of all pregnant women of different birth orders were screened through ultrasonograph ic evaluation in the second trimester (12wks to 28wks) for congenital anomalies.

The details regarding the maternal parity, antenatal history and other risk factors were taken & recorded as per proforma Informed consent was obtained from the parents and the data collection was carried out in the vernacular language of the parents.

Results:

In our study, a total of 112 cases of congenital malformations were observed. These were further categorised according to birth order at different maternal age groups and the findings were tabulated The parity of the mother contributes to a certain extent in causing congenital anomalies. In our study primiparous women were observed to have a higher risk when compared to multiparous women.

Out of 112 cases we observed 36 cases (32.14%) in primigavida(G1), 48 cases (42.85%), in para-II(G2) and III(G3) and 28 cases (25%) in para-IV(G4) and above (Table-1)

Table 1: Distribution of cases based on Parity

Parity	Total no of cases	%
G1	36	32.14
G2	30	26.78
G3	18	16.07
G4	13	11.60
G5	15	13.39

Table-2 shows the distribution of parity in different age groups of mothers. In 15-20 years age group, 20 cases were of primi. In 21-25 years age group, 8 cases belonged to primi, 5 cases to para-II and 1 in para-III where as in 26-30 years age group 4 cases were seen in para-II and 2 cases each in para-III and para-IV. In 31 years and above 14 cases were seen in para-V & above.

Table 2: Distribution of cases based on Maternal Age & Parity

Maternal age	Parity					Total
	G1	G2	G3	G4	G5 & above	
15-20yrs	20	2	0	0	0	22
21-25yrs	8	5	1	0	0	14
26-30yrs	1	4	2	2	1	10
31yrs & above	7	19	15	11	14	66
Total	36	30	18	13	15	112

Discussion:

Increased awareness of various anomalies in the general population, improvement in diagnostic modalities, advancement of knowledge in pathophysiological aspects of the defects and identification of the teratogenic agents involved in causing various birth defects helped to some extent to identify the causative factor for few congenital malformations Worldwide surveys have shown that the birth prevalence of congenital anomalies varies greatly from country to country (AnupamKaur and Jai Rup Singh, 2010)[1] These variations may be explained by social, racial, ecological, and economical influences.

Higher frequency of anencephaly, hydrocephalus were born to multi para where as one third of Mongols were born to primi para along with spina bifida.***(Malpas, 1933)[2]***

In ***1979 Goravalingappa et.al [3]*** have noted higher incidence of malformation born to elderly primi para, & second para in the age group 31-35 years and above and also in younger age group of 16–20 years with proportionate increase in parity.

Contrary to this, a comprehensive rural health project (CRHP Hospital) at Ballabhagarh, in the state of Haryana reported higher incidence in maternal age group of 25 – 35 years, and also malformations in fifth gravida.***(Kulshresta et al, 1983). [4]***

Incidence of congenital malformations increased with younger maternal age, being most frequent in the age groups 15–20 and 21–25 years and it declined with increased birth order.***(Choudary et al, 1984)[5]***

In 1994 Swain. et. Al [6]have noted significantly higher incidence of malformation among the mothers of gravid four In 1995, a study conducted in Al-jamahariya hospital, Libya revealed a higher proportion of neonates with chromosomal anomalies and also in those borne to mothers of 40 years or more and of higher parity.***(Singh et al) [7]***

Assessment of the incidence of congenital defects is very difficult due to early abortions, stillbirths, prematurity, neonatal deaths, and late manifestation of the defects.Therefore the values depend on the selection criteria of the study group. Even the diagnostic tools used in the study forms an important criteria. Therefore the case selection criteria should be stringently defined and followed.

The genetic researchers believe that the risk of mutation in the women with third and higher gravidity is higher than the women with primary or secondary gravida. In addition, malnutrition in these mothers is very high.

Malnutrition in multiparous women leads to reduction of birth weight and is associated with congenital anomalies in children. The risk of pregnancy induced hypertention rises rapidly with age for primi gravidae but less severely for multi gravidae. ***(John G. Haaga, 1991) [8]***

In our present study, the frequency of malformations declined with increased parity. In majority of cases, 36 out of 112 (32.14%), anomalies were seen in primi para (G1) followed by 30 cases (26.78%) in second (G2), 18 cases (16.07%) in third para (G3) and 13 cases (11.6%) in para four (G4) .

Table 3 : Congenital Anomalies In Different Parities In Various Studies

SL NO	AUTHOR	TOT (n)	PARITY		
			G1(%)	G2 & G3(%)	≥ G4(%)
1	***Neelu Desai et al,2006***	79	40	50	9.4
2	***Taksande et al,2010***	179	34.7	57.5	7.8
3	***Present study 2012***	112	32.14	42.85	25

Our findings were consistent with those of **Taksande et al [9]** (Table 3). The various studies show that there is a strong association between first order of birth and occurrence of malformations. But **Neelu Desai et al [10]** observed more number of malformations in second (G2) & third para (G3).

Conclusions:

The present study gave us an idea regarding the frequency of distribution of congenital anomalies and also its relation with maternal parity. Most of the aetiological factors remain obscure, but require detailed history taking and thorough investigations for the early diagnosis and treatment.

There are various confounding factors which effect the results. Some of them are lack of proper history, parents not willing to reveal the health status of siblings, lack of reporting, and unavailability of proper health care facilities. More stress should be laid on prevention by regular antenatal care and avoidance of known teratogenic agents, maternal education, Premarital counselling, Prenatal ultrasonography at about 8-12 weeks,supplementation of folic acid prior to conception and to every pregnant women especially in the embryonic period.

Genetic studies should be made mandatory for all the pregnancies presenting with family history of suspected chromosomal anomalies and in pregnancies of repeated abortions/still births which are highly suggestive of chromosomal aberrations and in such cases prenatal genetic counselling is a must.

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