

Prevalence of Different Congenital Anomalies in KPK: An Ultrasonographic Study

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ABSTRACT

Objective: To study the congenital abnormalities prevailing in our society by ultrasonography in 1000 prenatal cases.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the pregnant females visiting the antenatal clinic of Khyber Teaching Hospital Peshawar and Khyber clinic (Jamrud) from August 2016 to January, 2017.

Materials and Methods: 1000 cases of pregnant female visiting antenatal clinic were selected under informed consent. Detailed history was taken about the menstrual cycle and duration of pregnancy. History of any disease, drug intake and exposure to X-rays during the pregnancy was taken. With the help of Abdominal Ultrasounds, the embryo and fetus were visualized. Data were collected and entered into the computer followed by statistical analysis of data and expressed as percentages.

Results: In the study population of 1000 cases, a total number of 692 (69.2%) cases were normal. A total of 308 (30.8%) abnormal cases were detected, 230 of the abnormal cases (38.33%) were observed in first trimester, 60 cases (30%) in second and 18 cases (9%) were detected in third trimester. The CNS anomalies were detected in 19(50%) of cases, musculoskeletal in 7(18.42%), genitourinary in 4(10.42%), facial in 2(5.26%), gastrointestinal in 2(5.26%) and congenital anomalies involving multiple systems were found in 4(10.52%) of cases.

Conclusion: It is finally concluded that the congenital anomalies can be detected in prenatal period by ultrasonography and early detection of congenital anomalies is helpful in management of pregnancy.

Key Words: Congenital anomalies, prenatal, ultrasound, trimester.

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INTRODUCTION

Birth defects, congenital anatomic anomalies and congenital malformations are the terms used for developmental anomalies seen at birth¹. These anomalies are the main causes of infant mortality. They may be hereditary, structural or functional. The study of abnormal development is known as teratology. The period of development (3-8 weeks) during which the primordia of different organs are established, is the period of embryogenesis and the period beyond this till birth is the fetal period, a period of growth and maturation. Most of the congenital defects are initiated in the embryo rather than the fetus^{2, 3}.

Most common causes of birth defects involved genetic, environmental factors^{4,5}. There are various viruses such as measles, mumps, human immunodeficiency virus (HIV), influenza virus, cytomegalovirus that cause high grade fever in mother and are responsible for causing congenital abnormalities in fetus.

The chorioamnionitis may leads to cerebral palsy by damaging the white matter of cerebrum^{6,7}. Various drugs and chemical agents are also responsible for congenital anomalies⁸. The ionizing radiations may damage the embryonic cells resulting in chromosomal injury and mental and physical retardation. Maternal diseases may have affect on growing fetus like diabetes mellitus which can result in large baby (macrosomia), vertebral anomalies, limb defects and congenital heart disease⁹. Cigarette smoking and alcohol intake may cause growth retardation in fetus¹⁰.

No single classification is used internationally, but the most widely used classification of congenital abnormalities is the International Classification of Diseases. There are four types of birth defects, which are clinically significant such as Malformation, Deformation, Dysplasia, Disruption and Deformation.

Ultrasound could potentially be an effective method to increase and facilitate the study of developmental anatomy in a relevant manner. It is the most commonly used imaging technique to evaluate the presence of congenital anomalies in prenatal period^{11, 12}. The major advantage of ultrasonographic examination of obstetric population is to gain valuable information about pregnancy progress, prenatal diagnosis of structural birth defects and to provide effective and timely treatment.

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MATERIALS AND METHODS

A cross sectional study was carried out on pregnant females visiting the antenatal clinic of Khyber Teaching Hospital Peshawar and Khyber clinic (Jamrud) during the study period (from August 2016 to January, 2017) in order to assess abnormal developmental events in embryonic and fetal period. A total of 1000 patients were included in the study. Inclusion and exclusion criteria were set as pregnant women greater than or equal to 15 years of age, willing for ultrasound were considered for the study. Patients unwilling for ultrasound, poor visualization due to technical factors e.g. obesity, surgical scars and history of non-compliance with prenatal visits in the current or previous pregnancy were excluded from the study.

All the pregnant subjects were recruited under informed consent. Detailed history was taken about the menstrual cycle and duration of pregnancy. History of any disease, drug intake and exposure to X-rays during the pregnancy was taken. With the help of abdominal ultrasound, the embryo and fetus were visualized. Data were collected and entered into the computer followed by statistical analysis of data. Percentages were calculated for all variables.

RESULTS

It was observed that in the study population of 1000 cases, 600 (60%) cases were studied in first trimester of pregnancy, 200 (20%) cases were in second trimester and the remaining 200 (20%) cases were in third trimester (table 1). Out of these 692 (69.2%) of the fetuses were normal. A total of 308 (30.8%) abnormal cases were detected. Among abnormal cases, 230 cases (38.33%) were observed in first trimester, 60 cases (30%) were in the second and 18 cases (9%) were detected in third trimester (Table 2).

In the current study, the CNS anomalies were detected in 19(50%) of cases, musculoskeletal in 7(18.42%), genitourinary in 4(10.42%), facial in 2(5.26%), gastrointestinal in 2(5.26%) and congenital anomalies involving multiple system in 4(10.52%) of cases (Table 3). The details of distributions of various anomalies are depicted in table No. 4.

Table No.1: Distribution of pregnant cases according to trimesters

S. No	Trimesters	No. of Cases	% age
1	First Trimester	600	60
2	Second Trimester	200	20
3	Third Trimester	200	20

Table No.2: Distribution of abnormal cases in different trimesters

Types of Pregnancy	No. of cases	%	1 st	%	2 nd	%	3 rd	%
Normal	692	69.2	370	61.66	140	70	182	91
Abnormal	308	30.8	230	38.3	60	30	18	9
Total Cases	1000	100%	600	100%	200	100%	200	100%

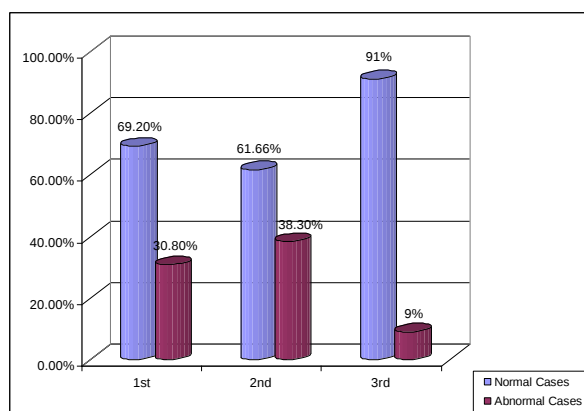


Figure No.1: Distribution of abnormal cases in different trimesters

Table No.3: Distribution of congenital anomalies in different systems.

S. No	System	n	%age
1	Central nervous	19	50
2	Musculoskeletal	7	18.42
3	Genitourinary	4	10.52
4	Gastrointestinal	2	5.26
5	Facial	4	10.52
6	Multiple	2	5.26

Table No.4: Nature and percentage of abnormal cases and anomalies in 1000 pregnancies

Anomalies	n	% age
Missed Abortion	250	25
Hydatidiform Mole	20	2
Anencephaly	12	1.2
Anencephaly with omphalocele	1	0.1
Hydrocephaly	3	0.3
Hydrocephaly with spina bifida	1	0.1
Meningomyelocele	3	0.3
Lumbosacral lipomeningocele	1	0.1
Cleft lip	2	0.2
Achondroplasia	1	0.1
Cystic hygroma	1	0.1
Gastrochisis	1	0.1
Parapagus	1	0.1
Polydactyly	1	0.1
Talipes equinovarus	1	0.1
Hyperextended right limb	1	0.1
Left Amelia & absent right foot	1	0.1
Parasitic twin	1	0.1
Apert syndrome	1	0.1
Hydrocele	1	0.1
Bladder extrophy	1	0.1
Cloacalextrophy	1	0.1
Absent penis	1	0.1
Rudimentary Genitalia	1	0.1

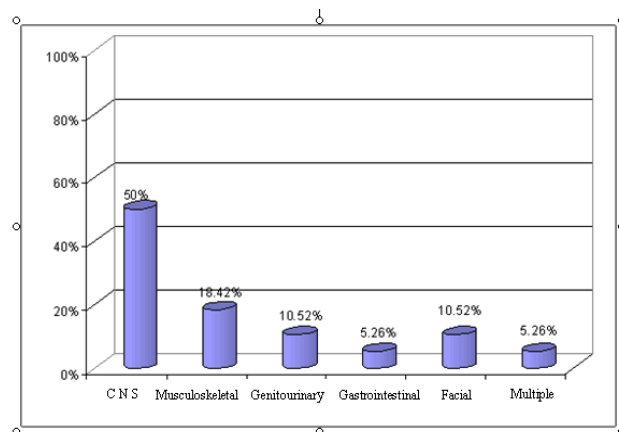


Figure No.2: Distribution of congenital anomalies in different systems

DISCUSSION

This study has been undertaken to assess the prenatal congenital anomalies with trans-abdominal ultrasound. In this context, pregnant ladies from tribal area (Khyber Agency) visiting Khyber Clinic and from Peshawar valley visiting Khyber Teaching Hospital were studied to get the objectives.

The technology of ultrasound is in use since late 1940s and early 1950s and it has progressed greatly over the time. Now it is predicted that ultrasound equipment will be the new stethoscope of future^{13,14}. It has evolved rapidly as one of the imaging modalities and also comprises almost 25% of imaging worldwide. Hence the main objective of our study was to explore the best way of using ultrasound technique in diagnosis of prenatal structural birth defects and implement effective care service.

The incidence of congenital malformations was 3.8% in the present study, including still births, live births and major malformations. Out of this, CNS malformations were found to be more than that of other systems. CNS malformed babies were born dead. Chances of giving birth to malformed baby increase with the age of mother. Chances of congenital abnormality also increase in consanguineous marriage. The incidence of malformed babies is higher in mothers taking different medicines and in those exposed to radiations during the pregnancy.

The present study is in lined with the study of Hematyar and Khajouie (2005) carried out in Iran on 1000 live births. It is inconsistent with a study from Liaquat National Hospital and Medical College, Karachi Pakistan, which reported that incidence of congenital anomalies, was 15.8/1000 in live births. It was 2.8% in the Munium et al (2006), a study conducted in Aga Khan University Hospital, Karachi and a study from Liyari General Hospital reported it to be 11.4/1000 in total births¹⁵ which is less than 3.8% of the present study. Another study conducted in University Hospital in Sindh has shown the results of 16% of congenital

abnormalities in stillbirths¹⁶. An Iranian study reported the prevalence of all congenital anomalies to be 29.5 /1000 in live births, in children from birth to eight years that impair the function with or without structural defects¹⁷. These variations in prevalence might be explained by racial and social influences that are commonly seen in genetic disorders.

The pattern of anomalies also showed differences from other neighboring regions. In present study CNS anomalies are the most common; one of the Indian studies reported the same¹⁸ while study from Liaquat National Hospital in Karachi showed the GIT defects as commonest defect while in studies from Iran Musculoskeletal anomalies were reported as commonest^{19,20} similar to study conducted in India²¹. This variability from different areas may be due to various risk factors seen to be associated with congenital anomalies such as geographical distribution, consanguinity and socio-cultural factors.

CONCLUSION

It is concluded that the congenital anomalies can be detected in prenatal period by ultrasonography and early detection of congenital anomalies is helpful in management of pregnancy.

Author's Contribution:

Concept & Design of Study:	Munila Shabnum Khattak
Drafting:	Shabnum Aamir & Zahid Shah
Data Analysis:	Zahid Shah & Shabnum Aamir
Revisiting Critically:	Zahid Shah & Munila Shabnum Khattak
Final Approval of version:	Munila Shabnum Khattak & Shabnum Aamir

Conflict of Interest: The study has no conflict of interest to declare by any author.

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