

THE PREVALENCE AND TYPES OF CONGENITAL ANOMALIES IN NEWBORNS IN ERBIL

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SUMMARY: To study and know the types of congenital abnormalities, the prospective study started for fetus that was born in the Erbil maternity hospital. We studied the sex of the baby, the age of the mother, and their location, and concluded the following results: Among the various types of congenital abnormalities, the highest percentage was observed in the ones related to the nervous system (spinal cord) 34.8%, followed by encephala 15.94%, heart disorders 10.14%, and foot anomalies 8.7%. Moreover, most congenital abnormalities occurred in male children (about 65.21% anomalies). The highest congenital abnormality is observed among babies delivered by mothers aged between 30 and 45 years (i.e., 50.72%), and the mean maternal age was 34.65 ± 5.45 years.

Key words: Congenital abnormalities, genetic disease

INTRODUCTION

Congenital abnormalities are a major cause of perinatal and neonatal death (1), in both undeveloped and developing countries (2). These malformations have multifactorial etiologies and 40% of cases are idiopathic (3), but there is an impression that they are more prevalent in populations with consanguineous marriages (4). Many factors may cause congenital abnormalities, of which some can be explained while others have no known cause. The process of development of a child from a fertilized egg involves many complicated steps that may go wrong to cause a defect or difference. The upper extremities form between the fourth and sixth week of pregnancy when the baby is approximately an inch long yet appears much like a miniature baby. It has been estimated that 1 in 20 babies will have some imperfection (10). Some congenital abnormalities are inherited just like hair traits or eye color. Some of the

inherited differences may skip generations and show up only in the children when each parent passes on a no dominant gene to the child. Some genetic problems are new occurrences where the baby is the first to have the condition but he/she may pass it on to his/her children. Some drugs, such as chemotherapy agents and thalidomide, are known to cause birth defects. Recreational drugs, tobacco, and alcohol affect the development of a baby but have not been shown to be connected with specific upper extremity problems. Congenital constriction bands cause deformities in some babies. In this condition, threads of the amniotic membrane detaches from the lining and gets wrapped around the fingers and/or hand of the baby. The causes of the band formation are not known. Congenital abnormalities often occur without any obvious reasons, for example, one of the many steps in development of the baby would have gone wrong, causing a change in hand or arm. Geneticists are trying hard to find out specific diagnosis to determine if the condition is hereditary (11).

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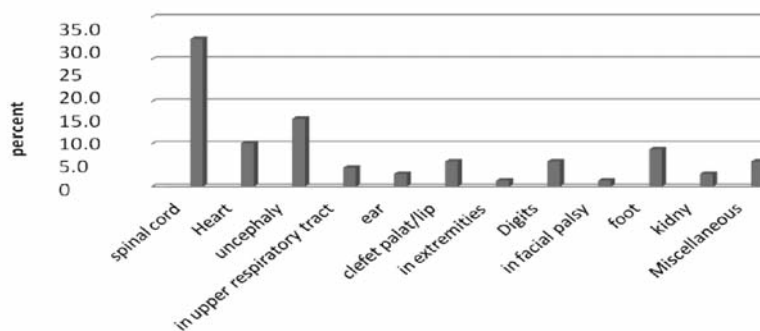


Figure 1: Distribution of anomalies .

MATERIALS AND METHODS

Although this study was a hospital-based survey, the majority of deliveries in Erbil took place in this hospital during October 2004–2005, and the data was taken as a good reflection of the congenital abnormalities in the area.

RESULTS

There were 69 cases (3.06/1000) of single or multiple congenital anomalies among 22487 live births that occurred during 1 year. The most common anomalies were related to the nervous system (spinal cord) (34.8%), encephala (15.94%), heart disorders (10.14%), and foot anomalies (8.7%) (Figure 1). Major abnormalities increased during last years. The gender of the fetus affects the prevalence of congenital anomalies. Males comprised 65.2% of anomalies, females comprised 33.33% births, and one infant was born with both female and male sexual characteristics. Incidences of congenital malformation were slightly more in male with F:M ratio of 1:1.9 (Table 1 and Figure 1). Many studies have documented male preponderance amongs congenital malformed organs of babies (12,13). Both genders were found to have greater anomalies related to the nervous system ($p > 0.05$). Maternal age is an important parameter in the birth of a congenitally malformed fetus (15). The mothers who are older than 35 years of age need to be examined more carefully because of the risk of delivering a congenitally malformed fetus. The highest congenital abnormality reported in this study was in the age group between 30 and 45 years, which was 50.72% (Figure 2), and the mean maternal age was 34.65 ± 5.45 years. This shows the risk of having a child with a congenital anomaly may increase with increasing maternal age. This is attributed to the

recognized increase of aneuploidy with advancing maternal age and the association of aneuploidy fetuses with structural anomalies. A more recent analysis suggests that the risk of nonchromosomal anomalies increases as women age (14,15).

DISCUSSION

Most children who are born with major congenital anomalies and survive infancy are affected physically, mentally, or socially and can be at increased risk of morbidity due to various health disorders (16,17). The prevalence of different congenital abnormalities in neonates varies from one country to another, which might be due to racial and environmental factors or differences in survey methods.

Approximately, 66% of major malformations have no recognized etiology, and most of them have multifactorial inheritance (18-20). These defects can occur for many reasons including inherited genetic conditions; poor diet; and toxic exposure of the fetus, for example, to alcohol, birth injury, and, in many other cases, for unknown reasons (21). The prevalence of

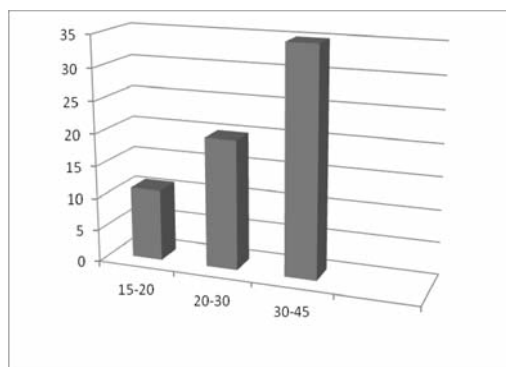


Figure 2: Maternal Age and anomalies

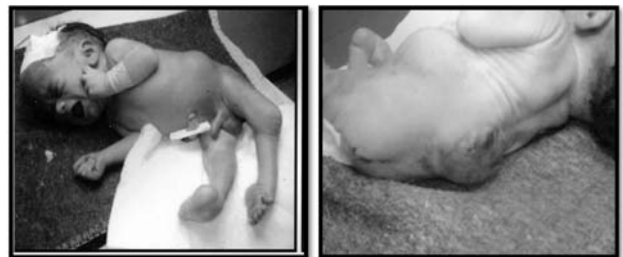
congenital anomalies at birth in developed countries is reported to be between 3% and 5%, (22). However, a study that investigated the number of all infants born in 1 year with a congenital anomaly at hospitals in Turkey found a birth prevalence of congenital anomalies of 3.65% (23). Our study reported a birth prevalence of congenital anomalies of 3.5%. In the present study, the prevalence of congenital malformation (3.06%) is consistent with reports from Atlanta, United States (31/1000 live births) (5), and Giza, Egypt (31/61000) (6). The result from our study is close to results from a hospital in Erbil, Kurdistan Region of Iraq (35.0/1000) and Al-Hasa, Saudi Arabia (33.4/1000) (7), higher than other studies in Spain (20.23/1000) (8) and India (27.2/1000) (9), and lower than the 3.8% and 4.7% reported from Copenhagen, Denmark (10) and British Columbia, Canada (4), respectively. The gender of the fetus affects the prevalence of congenital anomalies, and the genders were unequally distributed. These findings are consistent with (24) our finding that the maternal age is related to incidence of congenital malformation (25). For this reason, in mothers who are older than 35 years of age need to be examined more carefully because the risk of the birth of a congenitally malformed fetus is higher. In Turkey, 5.2% of mothers are 35 years of age or older. In this study, 50.72% of anomalous births were from older mothers, although this was statistically significant. Cardiovascular and pulmonary defects were more prominent in the Neonatal period. Urogenital and minor anomalies (miscellaneous) are more often seen in perinatal deaths without being a contributor to the cause of death (26).

In conclusion, the most common congenital anomalies in Erbil are as follows: nervous system anomalies, cleft palate and lip, musculoskeletal system anomalies, and chromosomal anomalies. The low birth prevalence of congenital anomalies (3.06 per 1000 births) in this study may be a result of personal and institutional characteristics of the current documentation system. In this study we investigated the records of last one year. There is a need for new studies to investigate the reasons of these anomalies. In addition to this, there is also a need for more extensive, nation-wide screening studies to determine the birth prevalence, and types and distribution of congenital anomalies in the Kurdish population. The lack of an ongoing surveillance system for congenital

anomalies in Iraq, especially, coupled with having neither a genetic service network, genetic counseling for preventive health services, nor properly trained health care personnel to provide these services, has had a negative effect on the prevalence of congenital anomalies. To eliminate all of these deficiencies, various national and institutional steps need to be taken. Despite the recent advances in the molecular diagnosis of congenital abnormalities, the initial identification and the decision to refer a patient for further molecular analysis and expensive genetic tests still relies frequently on clinical and radiological criteria. In view of absence of any other study, it is opined that similar studies are in need.



Congenital anomaly of head Male –borne at 29-12-2004 Erbil



Congenital anomaly of foot and spinal cord Male –borne, 14-1-2005 Erbil



Congenital anomaly of head Male – borne at 29-12-2004 Erbil

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