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Congenital Anomalies in Mosul City

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ABSTRACT

Case series study was conducted in the Statistics Division of the Nineveh Health Department, where statistical data were extracted from hospitals (Al –Khansa , Al-Bottol, Al-Salam, Ibn- Al Atheer Teaching Hospitals) that have delivery halls for the years (2011-2013)). There was a very strong correlation between maternal age and congenital anomalies and type of congenital anomalies. The highest incidence of anomalies in the age group (12-21) is congenital anomalies in the lower limb. The highest deformity rate in the mothers` age group (21-30) is congenital hydrocephalus in male birth (96.4%), while in female birth (43.6%). The percentage of congenital malformations was found in males (56.4%), while in females (43.6%), males were more likely to have congenital malformations than females. The most congenital deformity in still birth was found a hydrocehalus anomalies (65%). The most congenital deformity in the live birth also was hydrocephalus anomalies (35%).

Key wards: congenital, malformations, anomalies.

INTRODUCTION

Congenital anomalies are also known as birth defects, congenital disorders or congenital malformations. Congenital anomalies can be defined as structural or functional anomalies (for example, metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth, or sometimes may only be detected later in infancy, such as hearing defects.[1,2,3]

Causes and risk factors

Although approximately 50% of all congenital anomalies cannot be linked to a specific cause,however there are some known genetic, environmental and other risk factors[13].

Genetic factors

Genes play an important role in many congenital anomalies. This might be through inherited genes that code for an anomaly, or resulting from sudden changes in genes known as mutations[8]. Consanguinity (when parents are related by blood) also increases the prevalence of rare genetic congenital anomalies and nearly doubles the risk for neonatal and childhood death, intellectual disability and other anomalies. [4, 5, 6]

Some ethnic communities (such as Ashkenazi Jews or Finns) have a comparatively high prevalence of rare genetic mutations such as Cystic Fibrosis and Haemophilia. [7, 8, 9] Low-income may be an indirect determinant of congenital anomalies, with a higher frequency among resource-constrained families and countries. It is estimated that about 94% of severe congenital anomalies occur in low- and middle-income countries[10]. An indirect determinant, this higher risk relates to a possible lack of access to sufficient, nutritious foods by pregnant women, an increased exposure to agents or factors such as infection and alcohol, or poorer access to healthcare and screening[20]. Factors often associated with lower-income may induce or increase the incidence of abnormal prenatal development [10,11].

Maternal age is also a risk factor for abnormal intrauterine fetal development. Advanced maternal age increases the risk of chromosomal abnormalities, including Down syndrome [12, 13, 14]. Maternal infections such as syphilis and rubella are a significant cause of congenital anomalies in low- and middle-income countries [15, 16].

Aim of study

This research aims to identify the most important statistical indicators of congenital birth defects in Nineveh Governorate for the period (2011-2013 which includes the following information:

1. Sex of newborn
2. Type of anomalies.
3. Age of the mother.
4. The proportion of congenital malformations when there is still birth or the live birth

METHOD

The present study was conducted in the Statistics Division of the Nineveh Health Department, where statistical data were extracted from hospitals (Al –Khansa , Al-Bottol ,Al-Salam ,Ibn- Al Atheer Teaching Hospitals) that have delivery halls for the years (2011-2013)) In the province of Nineveh and did not enter the years (2014-2017) for lack of information during this period because of the control of ISIS on the province.

Study design
The study was case series

RESULT

The highest percentage of deformity in the maternal age group (12-21) years is congenital deformity at the lower limb .The highest incidence of deformity in the maternal age group (21-30) years is congenital hydrocephalus. The highest percentage of deformity in the maternal age group (31-40) years is Mongolisim. The highest percentage of deformity in maternal age group (41-49) is Mongolisim. The percentage of congenital malformations was found in males (56.4%), while in females (43.6%), males were more likely to have congenital malformations than females. The highest male congenital malformation is congenital hydrocephalus. The highest percentage of congenital malformations in females are congenital heart defects. The proportion of congenital malformations when there is a still birth more than the occurrence of deformities in live birth. The highest percentage of congenital deformity in the presence of a still birth is congenital hydrocephalus (65%). The highest percentage of congenital deformity in live birth is congenital hydrocephalus were the percentage of deformity (35%).

Table (1):Relationship between mother 's age and type of anomaly

Type of congenital anomalies	mother 's age				Total
	12-20	21-30	31-40	41-49	
Q00 anencephaly	9	22	12	0	43
Q01encephalocele	5	28	20	4	57
Q02 microcephaly	17	39	38	10	104
Q03 hydrocephalus	27	88	29	2	146
Q04 other brain congenital anomaly	12	27	7	1	47
Q05 spina pifida	7	15	6	0	28
Q06 other congenital anomalies in brain and spinal cord	29	63	21	2	115
Q05 spina pifida	1	5	1	0	7
Q07 other congenital anomalies in nervous system	26	54	33	4	117
Q10 congenital anomalies in lacrimal system and the eyelid	5	5	2	1	13
Q15 anomalies of the eye	10	31	5	1	47
Q16ear anomalies that cause hearing weakness	4	11	2	0	17
Q17acessory auricle	8	21	4	1	34
Q18 anomalies of Face and neck	4	7	8	0	19
Q20 congenital heart disease	9	21	9	0	39
Q35 cleft palate	2	10	4	0	16
Q36 cleft lib	14	43	15	0	72
Q37cleft palate and lib	6	20	7	1	34
Q38 congenital anomalies of gastrointestinal system	1	3	0	0	4
Q52 congenital anomalies of urinary system	0	3	0	0	3
Q53 undescended testes	4	11	3	0	18
Q54 hypospadias	7	16	7	0	30
Q56 sexual undifferentiated	6	10	3	0	19
Q73 spina pefida	1	2	0	0	3
Q90 down syndrome	16	23	42	17	98
Q91 chromosomal congenital anomalies	1	9	0	0	0
Q92 others trisomy malformation	0	1	0	0	1
Q93 monosomy malformation	0	0	2	0	2
Q97 other mutation anomalies	0	1	0	0	1
Q99 other chromosomal anomalies	1	4	1	0	6
Total	**430**	**1104**	**433**	**58**	**2025**

Table (1) show: relationship between mother's age and congenital anomalies
1. The highest percentage of deformity in the age group (12-20) is congenital deformation at the lower limb.
2. The highest incidence of deformity in the age group (21-30) is congenital hydrocephalus.
3. The highest percentage of deformity in the age group (31-49) is Mongolisim.

Table (2) Show the relationship between sex of neonate and congenital anomalies

Congenital anomalies	SEX		Total
	M	F	
anencephaly	17	26	43
encephalocele	34	23	57
microcephaly	44	60	104
hydrocephalus	85	61	146
other congenital anomalies in brain and spinal cord	60	55	115
anomalies of the eye	41	6	47
ear anomalies that cause hearing weakness	15	2	17
anomalies of Face and neck	10	9	19
congenital heart disease	23	16	39
other congenital heart disease	66	63	129
congenital anomalies of heart and circulatory system	12	7	19
nasal congenital anomalies	0	1	1
laryngeal anomalies	1	0	1
cleft palate and lib	21	13	34
congenital anomalies of gastrointestinal system	1	3	4
musculoskeletal system anomalies	0	1	1
skull and facial bone	0	1	1
vertebra and thoracic bone anomalies	1	0	1
breast anomalies	1	0	1
dawn syndrome	58	40	98
Total	**1143**	**882**	**2025**

The (Table 2) shows:

1. The percentage of congenital malformations was found in males neonates (56.4%), while in females neonates (43.6%), males were more likely to have congenital malformations than females.
2. The highest male congenital malformation is congenital hydrocephalus.
3. The highest percentage of congenital malformations in females are congenital heart defects.

Table (3): Show the relationship between (still birth, live birth) and congenital anomalies

Congenital anomalies	Live birth	Still birth	Total
Q00 anencephaly	11	32	43
Q01encephalocele	15	42	57
Q02 microcephaly	32	72	104
Q03 hydrocephalus	51	95	146
Q05 spina pifida	3	25	28
Q06 other congenital anomalies in brain and spinal cord	36	79	115
Q15 anomalies of the eye	13	34	47
Q18 anomalies of Face and neck	5	14	19
Q20 congenital heart disease	7	32	39
Q24 congenital heart disease	33	96	129
Q25 anomalies of major artery	0	2	2
Q30 nasal congenital anomalies	0	1	1
Q34 other congenital anomalies of respiratory system	0	1	1
Q35 cleft palate	6	10	16
Q36 cleft lib	26	46	72
Q38 congenital anomalies of gastrointestinal system	1	3	4
Q41 congenital small intestine atresia and stenosis	1	2	3
Q52 congenital anomalies of urinary system	0	3	3
Q66 anomalies of the foot	15	22	37
Q67 anomalies of head and musculoskeletal system	2	1	3
Q73limb ageneis	2	1	3
Q75 skull and facial bone anomalies	0	1	1
Q90 dawn syndrome	29	69	98
Q91 chromosomal congenital anomalies	1	9	10

The (Table3) shows:

1. The proportion of congenital malformations when there is still birth more than the occurrence of deformities in the live birth.
2. The highest percentage of congenital deformity in the presence of a still birth is congenital hydrocephalus (65%)
3. The highest percentage of congenital deformity in the live brth is congenital hydrocephalus, and the percentage of deformity was 35%

DISCUSSION

The pattern and prevalence of congenital anomalies may vary over time or with geographical location, reflecting a complex interaction of known and unknown genetic and environmental factors including socio-cultural, racial and ethnic variables. With improved control of infections and nutritional deficiency diseases, congenital malformations have become important causes of perinatal mortality in developing countries like Iraq[17].

The prevalence of congenital malformations in the newborns in mosul city were 4% according to Ninawa Health Department. The detection rate of structural abnormalities in Mosul was 4%, which is much higher than international figures. Although the prevalence of abnormalities depends upon the population being scanned, it does not show wide international variations, being in the range of 2% - 3%. The rate is about 3% in the United States, 2.5% in India, and 2% to 3% in the United Kingdom. In Pakistan, the antenatal prevalence of congenital ano-malies was 2.97%[7]. The high detection rate in Mosul may be attributed in part to suspicious cases referred by obstetricians, which will definitely increase the detection rate, when they mix with surveyed cases as part of their antenatal care. This data should stimulate future research and collaboration for more accurate and complete reporting of major congenital anomalies. Such a high detection rate should raise the need for establishing a national registr birth defects to monitor the epidemiology (occurrence, etiology, morbidity, mortality) of birth defects is an urgent need in Iraq[18,19]. The second argument that can be raised is that the reported figures are for prenatal diagnosis and not for actually seen birth defects in the new-born after labor. This should not undermine the benefit of the figures re-ported since; there is a significant relationship between prenatal detection and actual presence of malformations[20].

CONCLUSION

There is association between maternal age and risk of congenital anomalies of the birth, also the male birth and still birth more prone for congenital anomalies .

RECOMMENDATIONS

It is clear that there are several factors that lead to birth defects in the fetus and not only because of the marriage of relatives and therefore there are a number of important things and procedures that are indispensable to avoid these birth defects as much as possible as follows:

1. Pre-marital screening and genetic counseling, especially for those with family members who have genetic diseases.
2. Ensure that important vaccinations, such as measles, are taken at least three months before pregnancy and that tests are carried out to check for immunity to certain viruses that cause birth defects.
3. Folic acid intake is at least 0.4 mg per pre-pregnancy. If a mother has a neural tube or a mother has epilepsy, she should have a higher dose of folic acid (4 mg) for one month before pregnancy And another three months after pregnancy.
4. Check with the doctor if the pregnant woman is taking any treatment before pregnancy and discuss with the doctor about how it affects the pregnancy.
5. Reproduction early and not delayed after the age of 35 years.
6. Non-exposure to x-rays during the first months of pregnancy
7. Avoid taking unnecessary drugs during pregnancy, especially in the first months.

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