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Congenital Anomalies in Thi-Qar: A Recent Observational Study during 2019

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Abstract

Background: congenital anomalies are a significant but under recognized cause of disability and mortality among infants and children under the age of five years. They can be life-threatening conditions, result in long-term disability, and negatively affect health – care system, societies, families and individual (2).

Objectives: to estimate the prevalence of congenital malformations in our locality Thi-Qar province, most common type and any responsible factors for these anomalies.

Subjects and methods: a descriptive hospital-based prospective study in one year among newborn delivered baby in Bent Al-Huda Teaching Hospital, Thi-Qar Governorate, Iraq from January 2019 -December 2019. Both the mother and her baby were examined as a unit within 24 hours of birth A medical history was taken including parents age, residency, gestational age, and thorough physical examination of the baby was made. all baby with identified birth defects were admitted to neonatal care unit for observation, investigation, evaluation and management. The data were analyzed by simple statistical techniques recording number and percentage of cases.

Results: The overall prevalence of congenital anomalies among neonates was 1.26%. The first most prevalent congenital malformations were anencephaly 7.78%, down syndrome 6.11%, upper and lower limb malformation 6.11% hydrocephalus 9%, heart malformation5%. More than one system involvement was reported in (6.11%) cases. Most congenital malformations occurred in male children 52.73% anomalies, 62% > 2.5 Kg body weight &36.67% in term baby. The highest congenital abnormality is reported among babies delivered by mothers aged 20-45 years of age (i.e.,94%). More than 62 % of urban resident.

Conclusion: nervous system anomalies, down syndrome, and musculoskeletal system anomalies are most prevalent congenital malformations in Thi-Qar while the low birth prevalence of other birth defect 1.26% may be a result of institutional and personal characteristics of the documentation system.

Recommendation: The more wide extensive screening programs to detect the exact prevalence, type, causes and distribution of birth defects is needed and implemented as health program.

Key word: Prevalence, congenital malformation, prospective study.

Introduction:

Congenital malformation or birth defect is defined as functional or structural(morphological) abnormalities, including metabolic disorders, that develop in the fetus and embryo from conception and present from birth or detected later (1). Regardless of definition, congenital disorder can cause still births and spontaneous abortions. They are a significant but under recognized cause of disability and mortality among infants and children under the age of five years. They can be life-threatening conditions, result in long-term disability, and negatively affect health – care system, societies, families and individual (2).

Congenital malformations are estimated to be 2-4% of all births. Despite their low prevalence rate, birth defects are responsible for nearly 30% of perinatal deaths, & considerable infant morbidity in developed countries. (3) .Worldwide published report on the prevalence of congenital disorders that ranges from 20-55 per 1000 live birth with significant differences according to the study design, method of case ascertainment and the study population (4).

Each year about 7.9 million are born with congenital disorder and several hundred thousand more are born with congenital malformation due to the insult after conception such as exposure to the teratogens and infections. (5). Annually 2.7 million newborn die, more than 1 in 10 die of birth disorder, and, overall 484 000 deaths among children younger than 5 years of age. These figures underestimated because many children die with congenital malformation such as metabolic disorder and heart defects go undetected. (6)

Congenital disorder are multifactorial in origin , genetics factors,several nutrient deficiency,and environmental teratogens all of these affect the prenatal period. Maternal illnesses like diabetes mellitus (DM), maternal infections such as rubella folic acid and iodine deficiency, smoking ,alcoholism and radiation are all seems to be causes of contribute to congenital malformations (2).

Congenital defects can be of different types:

1. Structural abnormality: where structure or external form is abnormal.
2. Functional abnormality: where the organ function is affected, the effect can be at the level of the cell, where a specific enzyme may not be formed normally, such as in hemophilia a specific factor essential for clotting is absent.
3. Metabolic: where a metabolism due to absence or defect in one or more enzymes (7).

In the recent century with improving of life and progress in different sciences & technology including medical fields ,introduction of antibiotics ,vaccination &immunoglobulin will lead to control decrease the prevalence of infectious disease which were the most cause of mortality in under five years of age . congenital malformation is one of the important recent problems that increased both morbidity and mortality.(8)

Maternal and child health is one of the most important indicator of healthy community. So the study of incidence , prevalence risk factors ,distribution, and burden of the disease have apriority . (9).

Although, previous reports and studies discovered and documented various types of congenital malformations but the problems still increasing in its frequency with more disability ,mortality and high burden of disease on individual and his or her family . so there is a need for more worldwide

researches for good understanding of its distributions and risk factors . Low disease prevalence was reported in Japan 1.07 % to high prevalence that reported in Taiwan 3% this variable distribution could be attributed to the different study design used in the different studies (11).

This local study in AL-Nasiriya designed to report the pattern of neonatal congenital malformation

Aim : to estimate the prevalence of congenital malformations.

Specific objectives:

1- Most common type of birth defects.

2- Any factors that responsible or contribute to these anomalies.

Patients and Methods:

An unselected group including(180) newborn baby (95 males and 85 females) with documented congenital malformation were included in this prospective study. The mother of these newborn baby was attending the obstetric department in Bent Al-Huda Teaching Hospital, Thi-Qar Governorate, Iraq from January 2019 - December 2019.

Both the mother and her baby were examined as a unit within 24 hours of birth. A verbal consent had been taken from all participants, A full demographical, medical, obstetric and gynaecological histories was taken including parents age, residency, gestational age, and thorough physical examination of the baby was made. all baby with identified birth defects were admitted to neonatal care unit for further evaluation and investigated according to the case by blood sample ,sonography ,x-ray , some time echo when indicated with further mangment for each baby with its specific malformation. ICD-10 was used for classification and child with frequent anomalies counted only for one time according to serious anomaliy(2). Data were analyzed by simple statistical techniques recording number and percentage of cases. Spss version 23 for the analysis , P value lower than 0.05 was a considerable limit for significance. A written consent was obtained from all local authorities before engagement within the study.

Results:

Table 1 show the frequency & % of congenital malformation the first most prevalent congenital malformations were anencephaly 7.78%, down syndrome, upper and lower limb malformation 6.11% hydrocephalus, heart malformation 5%.

Table 1. Type of congenital malformation in observed patients (No.180):

Type of congenital malformation	No.	%
Anencephaly	14	7.78
Multiple malformation	11	6.11
Downs syndrome	11	6.11
Upper &lower limb malformation	11	6.11
Hydrocephalus	9	5
Heart malformation	9	5
Spina bifida	8	4.44
Cleft lip	8	4.44
Hydrocephalus &spina bifida	7	3.89
Abdomen malformation	7	3.89
Leg malformation	6	3.33
Intestinal malformation	6	3.33
Cleft lip and palate	5	2.78
Microcephaly	4	2.22
Foot malformation	4	2.22
Trachea-esophageal atresia	3	1.67
Hydrocephalus & limb malformation	3	1.67
Hand and foot malformation	3	1.67
Icthyosis	3	1.67
Kidney &foot malformation	3	1.67
Ambiguous genitlia	3	1.67
Polydactyl	2	1.11
Imperforated anus	2	1.11
Heart malformation & brain cyst	2	1.11
Chest & kidney malformation	2	1.11
Chest & abdomen malformation	2	1.11
Eye malformation	2	1.11
Laryngeal	1	0.56
Ear malformation	1	0.56
Abdomen malformation and hydrocephalus	1	0.56
Chest & vertebral Colum malformation	1	0.56
Spina bifida & intestinal atresia	1	0.56
Anencephaly , Spina bifida &exomphalos	1	0.56
Epiglottis	1	0.56
Down & cleft lip	1	0.56

Left lower limb malformation	1	0.56
Right lower limb malformation	1	0.56
Syndactly	1	0.56
Abdominal &limb malformation	1	0.56
Upper limb malformation	1	0.56
Imperforated anus & hand malformation	1	0.56
Imperforated anus & umbilical cord malformation	1	0.56
Congenital anal mass	1	0.56
Heart malformation & down syndrome	1	0.56
Heart malformation &exomphalos	1	0.56
Kidney malformation	1	0.56
Umbilical cord malformation	1	0.56
Congenital testicular malformation	1	0.56
genitlia&cleft lipAmbiguous	1	0.56
Intestinal malformation &cleft lip	1	0.56
Psoriasis	1	0.56

Table 2 show the frequency and % of the parent age of congenitally malformed baby ,97 of father &94 % of mother of 20-45 years of age. More than 62 % of urban resident.

Table 2 .frequency and % of congenital malformation according to the parents age and residency:

Variables			
Parents age	No	%	p-value
Father age			
<20 years	4	2.22	0.0001
20-45	176	97.78	
Mother age			
<20 years	10	5.56	0.001
20-45	170	94.44	
Residency			
Urban	113	62.78	0.012
Rural	67	37.22	
Total	180	100	

Table 3 show the frequency and percentage of malformed baby according to their sex weight and gestational age, the prevalence of congenital malformation was more common among male 52.73% as compared to female 46.67%, more than 62 % of >2.5 Kg and 36.67 % of ≥37 weeks of gestations.

Table 3. Frequency and % of congenital malformation according to the sex, weight, gestational age and mode of delivery:

Variable	No.	%	P value
Sex			
Male	**95**	**52.73**	**0.134**
Female	**84**	**46.67**	
Weight			
<1 KG	**2**	**1.11**	
1-2.5 Kg	**66**	**36.67**	**0.0143**
>2.5Kg	**112**	**62.22**	
Gestational age			
<37	**27**	**15.00**	
≥37	**66**	**36.67**	
Total			

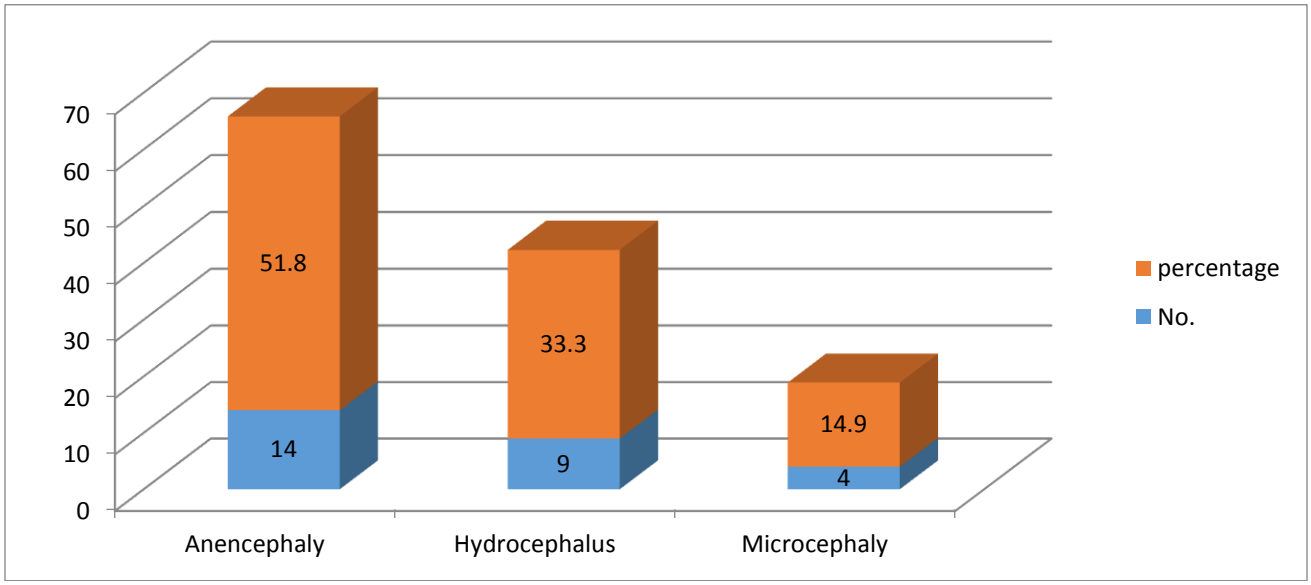

Figure 1: Common CNS anomalies

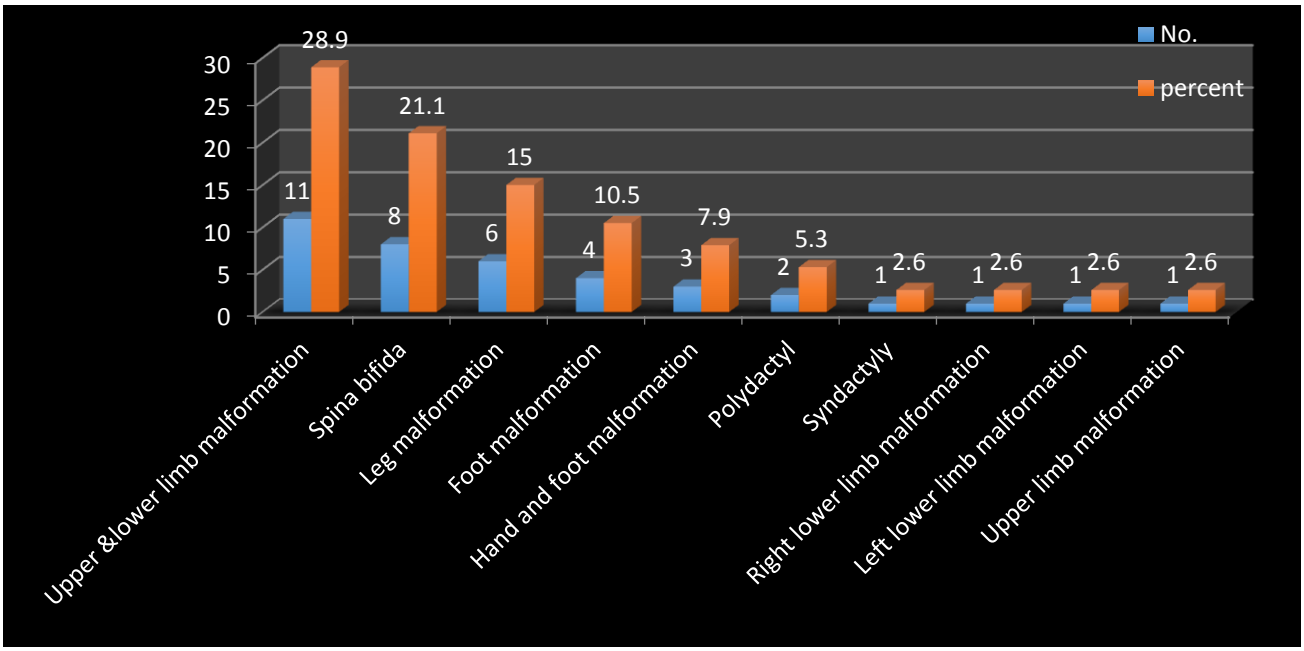

Figure 2: Common Musclo- Skeletal anomalies

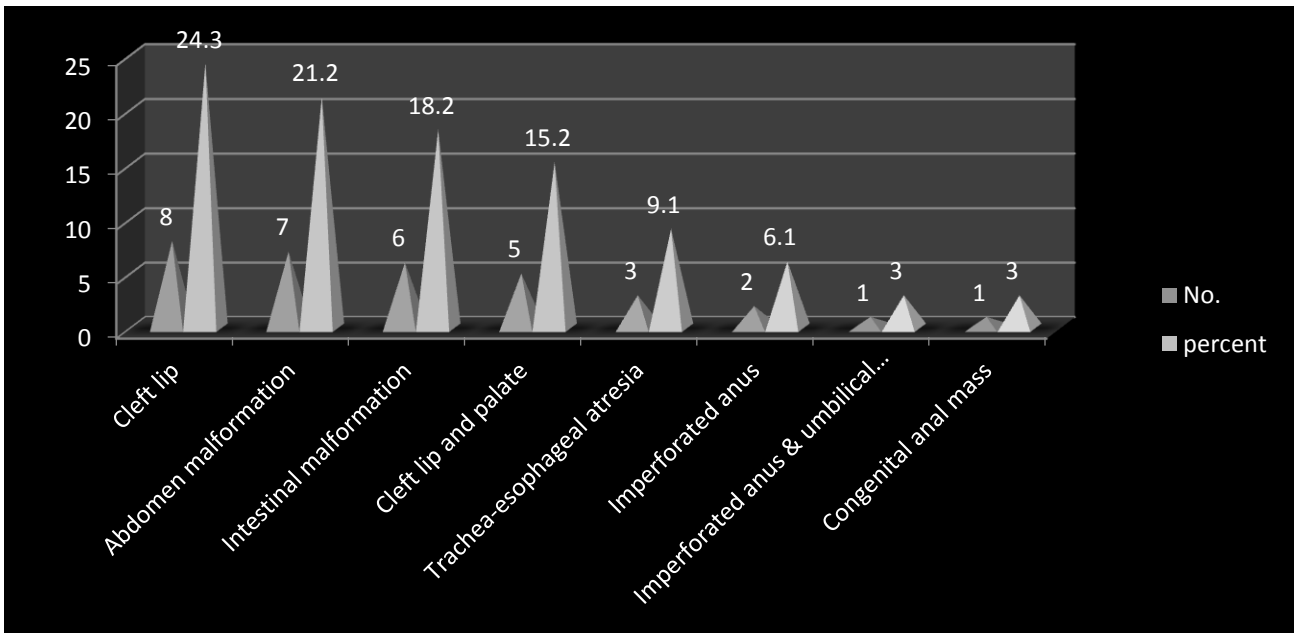

Figure 3: Common GIT anomalies

Discussion:

In the last decade there was improvement in the control of infectious disease and nutritional deficiency diseases, so the congenital malformations have become one of the important factors of perinatal mortality in developed countries and a good sensitive indicators of perinatal death in a developing country(11).

Nearly ,66% of major birth defects have no detectable and recognized cause, and most of these malformation due to multifactorial inheritance (12).

In developed countries the prevalence of birth defects between 3-5%(13). The overall prevalence of congenital malformation in the present study is 1.26% ,these results in accordance with finding reported in Kuwait study by Madi*et al.*(14) who documented an prevalence of 1.25%, India study by Swain *et al.*(11) who found that, an prevalence of 1.2%, in the study of United Arab Emirates(15) and in Egypt study : 1.58% in Cairo (16)and 1.16% in Alexandria(17) .It is lower than Erbil study 3.5(18)% and Turkey 3.65 %(19) These differences in prevalence of congenital anomalies in different countries of the world might be due to several factors such as social and racial effects that are specially in inherited disease. Also the results of different study vary depending on the study design, sample size and the period of observation (20).

The present study revealed that

1- the most common birth defects were related to nervous system (Anencephaly 7.78% & Hydrocephalus 5%) it is consistent with Erbil study (18) & the second most prevalent system was musculoskeletal 6.11%, it is similar to the finding of Egypt study (21). More than one system involved in 6.11% of the studied sample.

2- The prevalence of congenital anomalies was more common among parents age 20-40 years (94 % mother & 97 % of father) ,it was consistent with Erbil study 50.72 % in the mother of 30 – 45 years old (8). So that older age group mothers need to be examined more carefully due to the risk of the birth of a congenitally malformed baby is higher.

3- The prevalence was slightly more common among male 52% as compared to females 46%) . Many studies have reported male preponderance of congenital malformation (22,23) ,

4-it was more common among urban 62% as compared to the rural area 37%) these could be attributed to the pollution in the urban areas.

Conclusion:

the most prevalent congenital malformations in Thi-Qar are as follows: nervous system anomalies, down syndrome, and musculoskeletal system anomalies. IN this study, the low birth prevalence of birth defect 1.26% may be a result of institutional and personal characteristics of the documentation system.

Recommendation

this study was included the records of last one year only so there is a need for further studies to document the risk factor and causes of these anomalies. Furthermore, there is a need for more wide extensive screening programs to detect the exact prevalence, type, causes and distribution of birth defects. nation-wide screening studies to determine the birth prevalence, and types and distribution of congenital anomalies.

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التشوهات الخلقية في محافظة ذي قار: دراسة رصد حديثة للعام ٢٠١٩

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خلفية البحث :التشوهات الخلقية هي واحدة من الاسباب الرئيسية للمراضة والوفيات للاطفال حديثي الولادة ودون السنة الخامسة من العمر وهي مشكلة تؤثر سلبيا على الاشخاص والعائلة والمجتمع والنظام الصحي .

الهدف : دراسة معدل انتشار التشوهات الخلقية والانواع الاكثر شيوعا والعوامل المرتبطة بها.

أشخاص و طريقة الدراسة :اجريت هده الدراسة المقطعية لجميع الاطفال حديثي الولادة الدين ولدوا في مستشفى بنت الهدى التعليمي خلال سنة واحدة امتدت من الاول من كانون الثاني ولغاية كانون الاول للعام ٢٠١٩ في محافظة دي قار ، وتم اخد معلومات عن الابوين تشمل العمر،السكن ،العمر الحملي وتم فحص الاطفال من خلال اخد الوزن والمراقبة واجراء الفحوصات المختبرية والتقييم والعلاج.وتم تحليل البيانات من خلال حساب الترددات والنسبة المئوية.

النتائج : معدل انتشار التشوهات الخلقية ١.٢٦% واكثرها شيوعا انعدام الرأس ٧.٧٨%ومتلازمة داون وتشوهات الاطراف العلوية والسفلية ومعدل انتشار كل منها ٦.١١% وتليها استسقاء الرأس وتشوهات القلب وكل منها ٥%.وشكللت التشوهات المتعددة نسبة انتشار ٦.١١%.اكثر التشوهات انتشارا بين الدكور ٥٢.٧٣% وبين الاطفال ممن اوزانهم >٢.٥كغم(62%).كدلك كانت اكثر التشوهات انتشارا للاطفال الدين ولدوا لامهات تتراوح اعمارها بين ٢٠-٤٥ سنة ٩٤% ومن سكنة المناطق الحضرية ٦٢%.

الاستنتاجات : اكثر التشوهات شيوعا هي انعدام الرأس ،متلازمة داون، تشوهات الاطراف العلوية والسفلية ،استسقاء الرأس وتشوهات القلب وكدلك وجود معدل واطيء لانتشارالتشوهات الخلقية قد يعزى الى نظام التوثيق بالنسبة للاشخاص العاملين وعلى مستوى المؤسسة الصحية.