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Congenital Anomalies in NNICU at Tobruk Medical Center

(Original Research Article)

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Abstract: Background: Birth defects, encountered frequently by pediatricians, are important causes of childhood morbidity and mortality. The aim of our study was to assess the prevalence and gender distribution of congenital anomalies (CAs). A cross sectional design (descriptive study) was applied. Date was collected with review of records in all files of neonates born with congenital anomalies in Tobruk hospital along the duration between January 2020 to September 2021 All women giving birth to viable babies were included. Demographic details and the type of CAs in all babies were recorded. Diagnosis of CAs was based on clinical evaluation, radiographic examination, ultrasonography, echocardiography and chromosomal analysis of the newborn whenever recommended. The overall incidence of CAs among live born neonates was studied. During the study period 1071 newborns admitted to NICU of Tobruk medical hospital,100 neonates of them have congenital anomalies, the prevalence of congenital anomalies(CAs) was (0.093) 9% , with heigh proportion among male to female 56% and 41% with male to female ratio of 1.3:1 ,the Gastrointestinal malformations about 27% is the most common malformation followed by Chromosomal anomalies with Involvement of more than one system observed in (26%) cases followed by the central nervous system(21%) Musculoskeletal defects represent about 14% and others congenital anomalies represent about 12%. The evidence from this study suggested the most frequency of CAs in newborn admitted to NICU of Tobruk medical center in this period was to GIT Abnormality followed by Chromosomal malformation.

Key Words: Congenital Anomalies Incidence, Descriptive Study, Babies.

Introduction

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 defect (1). The etiology of CAs is still unknown and multifactorial causes was play role in 20-25% of cases, (5) environmental factors include any non-genetic factors (example: maternal infection, maternal drug abuse (teratogenic) and nutritional deficiency (e.g., folic acid deficiency) (2). Chromosomal anomalies are responsible for most malformations that occur due to genetic factors. The importance of CAs lies not only in their contribution to neonatal and perinatal mortality, but also that they lead to disability in infants and children. The prevalence of congenital anomalies may vary over time or with geographical location, this variation reflecting a complex interaction of known and unknown genetic and environmental factors, there are many studies tried to estimate the prevalence of CAs in the world. The compare our study with other studies on the world for example, Congenital anomalies accounts for 1.9 – 2.7% the incidence in India (3). Another study was done in Fayoum Governorate, Egypt in 2021 (4) the prevalence was 7.4%. The aim of our study to estimate the frequency of CAs in newborns admitted to Tobruk medical center through January 2020 to September2021 All the records of newborn in this period was reviewed.

Methods

A cross sectional design (descriptive study) was applied. Data were collected with review of records in all files of neonates born with congenital anomalies in Tobruk hospital along the duration from January 2020 to September 2021. The total number of newborns admitted during that period was reported 1071newborn.

The work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans Inclusion criteria: Any case with congenital anomaly reported in the files during neonatal care workup.

Ethical considerations: As no intervention or direct interview was made, no consent was taken from family or guardian. Anyhow, authorized consent from administration of the hospital has been obtained and all of workup was made with strict confidentiality.

All health records in Tobruk hospital from (january2020- September 2021) were reviewed to collect data.

Statistical Analysis

Analysis of data was evaluated using SPSS version 20. Values that were recorded as mean and standard deviation were compared using Student's t test. P value <0·05 was considered significant.

Results

Total number of congenital anomalies that reported and admitted to NNICU at Tobruk medical center in period between January 2020 to September 2021 is 100 cases (table 1). showed that most of the cases with congenital malformations were males (56%) while females represented (41%) of total neonates with congenital malformations. heigh with male to female ratio of 1.3:1(table 7)

Maternal age ranged between 19 years and 49 years. Median maternal age was 35 years., the mean was 34.5 table 8 and showed that multiparity was present in 70. % In mother whose babies had congenital anomalies. Primigravida 30% table 9, the Gastrointestinal malformations about 27% table5 is the most common malformation followed by Chromosomal anomalies with Involvement of more than one system observed in (26%) table 2cases followed by the central nervous system (21%) table 4 Musculoskeletal defects represent about 14% table 3 and Others congenital anomalies represent about 12% table 6.

Table 1: Total Distribution of Congenital Anomalies

Cases	Cases	Percentage
Chromosome	26	24%
GIT	27	27%
CNS	21	21%
SKELETAL System	14	14%
Others	12	12%

Table 2: Chromosomal abnormalities

Cases	Total	Male	Female	Percentage
Down syndrome	8	5	3	8%
Edward syndrome	3	2	1	3%
Patau syndrome	4	2	2	4%
Marfan syndrome	3	3	0	3%
Noonan syndrome	1	1	0	1%
Prune belly syndrome	1	1	0	1%
Pierre robin syndrome	1	1	0	1%
Multiple congenital anomalies	3	0	3	3%
Sirenomelia	1	0	0	1%
Hay-wells syndrome of ectoderm dysplasia	1	1	0	%1
Total	26	16	9	26%

Table 3: SKELETAL Malformations.

Cases	Total	Male	Female	Percentage
Polydactyl	3	1	2	3%
Symbrachydactyly	4	2	2	4%
Congenital knee dislocation	2	2	0	2%
Osteogenesis	3	2	1	3%
Achondroplasia	2	1	1	2%

Table 4: CNS Malformation

Cases	Total	Male	Female	Percentage
Arnold Chiari malformation	8	3	5	8%
Hydrocephalus with meningomyelocele	3	3	0	3%
Hydrocephalus alone	3	2	1	3%
encephalocele	2	1	1	2%
Anencephaly	2	1	1	2%
iniencephaly	1	0	1	1%
craniorachischisis	1	1	0	1%
Moebius syndrome	1	1	0	1%
Total	21	12	9	21%
Arnold Chiari malformation	8	3	5	8%
Hydrocephalus with meningomyelocele	3	3	0	3%

Table 5: GIT Malformation

Cases	Total	Male	Female	Percentage
DIAPHRAGMATIC hernia	7	5	2	7%
Paraumbilical hernia	1	0	1	1%
omphalocele	5	2	3	5%
gastroschisis's	2	2	0	2%
Esophageal atresia	3	2	1	3%
Duodenal atresia	1	0	1	1%
Imperforated anus	3	1	2	3%
Cleft lip and palate	3	1	2	3%
Cleft palate	1	1	0	1%
Multiple intestinal atresia	1	1	0	1%
Total	27	15	12	27%

Table 6: Others

Cases	Total	male	Female	percentage
Choanal atresia	1	2	0	3%
Ambiguous genitalia	0	0	3	3%
Bladder exstrophy	2	0	0	2%
Hydrops fetalis	2	1	0	3%
Collodion baby	0	0	1	1%
Total	5	3	4	12%

Table 7: Malformed baby.

Male	54%
Female	41%

Table 8: Maternal factor

Mother Age	**Mean**	34.1
	Median	35
	Range	19 – 49

Discussion

We found the prevalence of CAs is 9% among 1071 newborns in this study done in Tobruk medical center. this is high when we compare with other study done in Fayoum Governate, Egypt. Was 7.4%, and other done in India was 1.9-2 the countries have variable rates of CAs: 2.46% in Oman (7), 1.25% in Kuwait (8), 2.4% in Lebanon (16), 3.76% in the Islamic Republic of Iran (9), 15% in Pakistan (10), 6.2% in Nigeria (11), 6.2% in Barbados (12), 2.89% in the United States of America (USA) (13), 8.39% in Nepal (14) and 6.2% in Bangladesh (.7%).

In our study the GIT malformation was the most common 27% followed by chromosomal abnormality 26%, CNS 21%, and then skeletal abnormality 14%

The down syndrome the most common in chromosomal abnormalities 8% then Patau syndrome 4%and Marfan syndrome 3% with Edward syndrome3%, Down syndrome is the most common chromosomal anomalies worldwide and this is approved by many studies. Moorthy et al. [28] demonstrated that Down syndrome is the most common chromosomal anomalies among live broth worldwide

In the current study show the GIT is the most common 27% and diaphragmatic hernia is the commonest one 7% compare with other studies done in the world, e.g., Iraq, the most common CAs were CNS anomalies, (23) also in Iran Islamic Republic CNS anomalies were

the most common, (24) in Egypt, in Assiut, was the musculoskeletal system, followed by genitourinary system and CNS (25). In Zagazig, anomalies of the musculoskeletal system were the most reported, followed by the CNS and GIT (26).,

But there is study done in Egypt, Alexandria pediatric university hospital had same resulted the high frequency of GIT abnormality 38% (21)

In the present study, , it was found that most of the cases with congenital malformations were males (56%) while females represented (41%) of total neonates with congenital malformations, (table7)

The study demonstrated multiparity was present in 70. % in mother whose babies had congenital anomalies. The relation between multiparity and congenital anomalies has been well documented in a study done by Prasad and Sukladas (20). show significant high incidence of malformations among the multipara in comparison with primipara.

The overall incidence of CAs in neonatal period in comparing with other studies is high despite the congenital heart diseases(is not focus in our study as it focus by other author in separate study)and this may be explained the fact that termination of pregnancy is illegal in libya

Conclusion

Most frequent congenital malformation in newborn admitted to NICU in Tobruk –Libya in two years was gastrointestinal malformations about27 % followed by chromosomal abnormality. The least frequent was the urinary and genitalia abnormality and with more frequent in male than female.

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