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RESEARCH ARTICLE

Newborn Congenital Anomalies in Babylon Hospitals.

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Abstract

Background:- Congenital anomalies are a worldwide problem; causing prenatal and infant death as well as postnatal physical disabilities.

Objective:- To determine the pattern of congenital anomalies in newborn and to determine factors associated with congenital anomalies.

Methods:- This was a descriptive cross sectional hospital based study involving Congenital Malformations, Deformations, and Chromosomal Abnormalities (Q00-Q99) of the International Classification of Diseases, (ICD-10) Admitted to Babylon maternity and Paediatric hospital and Al Hilla Teaching Hospital in Al- Hilla .

Results:- The most affected body system was the central nervous system (CNS) 50(34.02%) of the cases, followed by the musculoskeletal system 31(21.09%) , circulatory system 27(18.37%), digestive system 14(9.52%), genital system 13(8.84%), chromosomal abnormalities , not elsewhere classified 3(2.04%) , face and neck 2(1.36%), respiratory system 1(0.68%) and others 6(4.04%) .

Conclusions:-

1. Congenital anomalies are a worldwide problem
2. The most common affected system is the central nervous system followed by musculoskeletal system and circulatory system.
3. There is significant association between congenital anomalies with advance female gender, birth weight > 2.5 kg and significant difference in age of paternal and maternal range between 18-35 years old.

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Introduction:-

Congenital anomalies are developmental disorders present at birth. Congenital anomalies are a worldwide problem⁽¹⁾. According to the World Health Organization (WHO) the term congenital anomaly includes any morphological, functional, biochemical or molecular defects that may develop in the embryo and fetus from conception until birth, that is present at birth, whether detected at that time or not⁽²⁾. Structural defects of prenatal origin are classified according to the cause, timing, and extent of the developmental disturbance. These include malformations (defective organogenesis), dysplasia (abnormal cell or tissue structure) and deformations (mechanically induced changes of normal tissue)⁽³⁾.

The prevalence and pattern of congenital anomalies varies between regions and may also vary over time. The most common body systems involved in congenital anomalies include musculoskeletal, central nervous system, gastro intestinal system and cardiovascular system with the least affected system being the urogenital system⁽⁴⁻⁷⁾. Worldwide, the incidence of congenital anomalies is estimated at 3-7%, which means that more than 1 million infants are born with major congenital anomalies each year^(8, 1) but actual numbers vary widely between countries⁽⁹⁾. Various environmental factors have been identified to be risk factors for congenital anomalies. Among the risk factors are advanced maternal and paternal ages, parental consanguinity, teratogenic agents, such as infectious agents and drugs, and nutritional deficiencies⁽¹⁰⁾. Often environmental exposures involve multiple agents and other confounding elements, creating difficulty in identifying the underlying cause⁽¹¹⁾. Maternal health conditions that

contribute to increased risks for congenital anomalies include obesity, use of anticonvulsant medications during pregnancy, and insulin-dependent diabetes mellitus⁽¹¹⁻¹³⁾. Pregnancy induced hypertension, vaginal bleeding early in pregnancy, twin pregnancy, oligohydramnios, polyhydramnios, breech presentation, period of gestation, antenatal care during pregnancy, history of previous abortions and still births have been observed to be maternal factors associated with congenital anomalies⁽²⁾. Prematurity, increasing birth order, newborn's sex and low birth weight have also been associated with higher risk of congenital anomalies^(2,14).

Methods:-

This was a descriptive cross sectional hospital based study involving Congenital Malformations, Deformations, and Chromosomal Abnormalities (Q00-Q99) of the International Classification of Diseases, (ICD-10) Admitted to Babylon maternity and Paediatric hospital and Al Hilla Teaching Hospital in Al- Hilla during period from January 2015 to January 2016 Data collection was performed by two parts.

At first part, variables recorded were about parental age, maternal characters and included the date of admission, age, history of chronic illness, drug ingestion, exposure to X-ray, history of CM in other offspring, parental consanguinity, and were obtained by interviewing with neonates mother.

The second part was about neonatal characters including live or dead birth, sex, existence of congenital anomaly and type of it. The birth weight, sex of baby and nature of anomaly were carefully noted. The mothers of affected babies were asked again about exposure to any probable etiological factors during pregnancy or positive family history.

Result:-

A total of 147 neonates were admitted during the study period and have different type of congenital anomalies.

Table -1- correlation of various factors to causation of congenital malformation

No.	Factors	No.	Percentage%
1	Gender		
	Female	75	51%
	Male	63	42.9%
	Ambiguous genitalia	9	6.1%
2	Maternal age		
	< 18	12	8.2%
	18-35	122	83%
	> 35	13	8.8%
3	Birth weight		
	<2.5 kg	57	38.78%
	>2.5kg	90	61.22%
4	Consanguinity		
	Yes	47	31.97%
	No	100	68.03%
5	Family history of abortion		
	Yes	22	14.97%
	No	125	85.03%
6	Family history of birth defect		
	Yes	31	21.1%
	No	116	78.9%
7	Life status		
	Alive	101	68.7%
	Dead	46	31.3%
8	Pregnancy stage or type		
	Singles	135	91.84%
	Twins	12	8.16%
9	Paternal age		
	< 18	2	1.36%
	18-35	111	75.51%
	> 35	34	23.13%

Table -2- congenital anomalies according to ICD-10 among 147 neonatal

no	System	Malformation types	Frequency	Percentage of all total malformation cases
1	<i>Central nervous system</i>	<i>Anencephaly</i>	50	34.02%
		<i>microcephalus</i>	2	
		<i>Congenital hydrocephalus</i>	22	
		<i>Spinabifida</i>	4	
		<i>Other congenital anomalies of brain and spinal cord</i>	20	
2	<i>Musculoskeletal system</i>	<i>Congenital anomalies of upper limb</i>	31	21.09%
		<i>Congenital anomalies of lower limb</i>	3	
		<i>Congenital anomalies of musculoskeletal system, not elsewhere classification</i>	22	
			6	
3	<i>Circulatory system</i>	<i>Congenital anomalies of heart and circulatory system</i>	27	18.37%
			27	
4	<i>Digestive system</i>	<i>Cleft palate</i>	14	9.52%
		<i>Cleft lip</i>	2	
		<i>Cleft lip and palate</i>	6	
		<i>Other congenital malformation of the digestive system</i>	1	
5	<i>Genital organs</i>	<i>Other anomalies of genito-urinary organs</i>	5	8.84%
		<i>Undescended testis</i>	6	
		<i>Ambiguous genitalia</i>	1	
			1	
6	<i>Chromosomal abnormalities , not elsewhere classified</i>	<i>Monglism</i>	3	2.04%
		<i>Other chromosomal anomalies</i>	2	
			1	
7	<i>Face and neck</i>	<i>Other congenital malformation of face and neck</i>	2	1.36%
8	<i>Respiratory system</i>	<i>Other congenital malformation of respiratory system</i>	1	0.78%
9	<i>Others malformation</i>	<i>Congenital anomalies of the skin</i>	6	4.08%
		<i>Hydrocele congenital</i>	1	
		<i>Other specified congenital malformation syndrome affecting multiple system</i>	2	
		<i>Other congenital malformation, not elsewhere classified.</i>	1	
			2	

During this one year study there were total 147 anomalies. The pattern congenital anomalies are shown in table -1- . Maternal age parameter revealed that 75 (51%) mother were 18-35 years, 13(8.8%) were above 35 years and 12(8.2) less than 18 years. Low birth weight (LBW) neonates were 57(38.78%) and 90 (61.22%) above 2.5 kg. history of consanguinity was negative 100(68.03%) than 47(31.97%). Maternal history of abortion was negative 125(85.03%) than 22(14.97%) .

Family history of congenital malformations (CMs) was negative 116(78.9%). Life states of neonatal were 101(68.7%) alive state while 46(31.3%) a dead state. Pregnancy stage or types were positive for single 135(91.84%) than twins 12 (8.16%). Paternal age parameter revealed that 111(75.51) father were 18-35years, 34(23.13%) were above 35 years and 2(1.36%) were less than 18 years.

The most affected body system was the central nervous system (CNS) 50(34.02%) of the cases, followed by the musculoskeletal system 31(21.09%), circulatory system 27(18.37%), digestive system 14(9.52%), genital system 13(8.84%), chromosomal abnormalities, not elsewhere classified 3(2.04%), face and neck 2(1.36%), respiratory system 1(0.68%) and others 6(4.04%). table -2-

Discussion:-

The present study showed that congenital anomalies are important paediatric problem. In this study The pattern congenital anomalies are shown highly significant to maternal age between 18-35 years old at pregnancy similar to that study in north of Iran⁽¹⁵⁾. In this study congenital anomalies were significantly associated birth weight of 2.5kg and above. Which is almost similar to study reported babies with birth weight of more than 2.5 kg (73.3%)⁽¹⁶⁾ and study of Mashuda *etal*⁽¹⁷⁾ However, most studies report a significant association between low birthweight and congenital anomalies^(18, 2, 14, and 19). The current study show high incidence of congenital anomalies in alive birth (68.7%) compared to dead birth which was similar to the result of this study⁽¹⁵⁻¹⁷⁾.

In this study, congenital anomalies of the central nervous system (CNS) were the most common anomalies accounting for about 34.02% of cases, Tomatir *et al* from Turkey found that central nervous system abnormality were the highest in position in their studies (46.67%, 31% respectively).^(20,21, 17).

Followed by musculoskeletal system 21.09%. Results from this study are similar to findings from Kenya and India where CNS, musculoskeletal was the most affected systems^(4, 17,18).

It is in comparison with a study from Saudi Arabia⁽²²⁾ that also reported CNS as the most commonly affected system. Similarly, a study from Iran⁽²³⁾ reported CNS, Musculoskeletal. In this study Most commonly affected system CNS followed by Musculoskeletal, and then cardiovascular system An Indian study⁽²⁴⁾ Revealed first ranking for CNS followed by Musculoskeletal and then CVS. Similarly, another study⁽²⁵⁾ also reported CNS anomalies as the commonest. But in contrast with results of this study. A study done in Uganda which showed that anomalies of the musculoskeletal system were most common, followed by anomalies of the skin⁽⁵⁾. A study done in Nigeria gastrointestinal system, central nervous system abnormalities, skeletal system were the most affected systems⁽⁷⁾. These differences are expected as patterns of congenital anomalies can differ in different parts of the world or in the same area at different times due to differences in genetically and environmental factors⁽⁹⁾.

In this study, the rate of CMs outnumbered in females gender was significantly compared to males and was consistent with results of study⁽²⁶⁾ (female 59.1%) and⁽¹⁵⁾. but in contrast with results of these study^(27-29,2,4,14)

Conclusion :-

1. Congenital anomalies are a worldwide problem
2. The most common affected system is the central nervous system followed by musculoskeletal system and circulatory system.
3. There is significant associated between congenital anomalies with advance female gender , birth weight > 2.5 kg and significant in age of paternal and maternal between 18-35.

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