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PREVALENCE OF CONGENITAL ANOMALIES IN NEW BORN - A HOSPITAL BASED STUDY

Anatomy

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ABSTRACT

Congenital anomaly is a major cause of neonatal mortality and morbidity.Proper data of congenital malformations are few in developing country like India.. But it is important to have comprehensive data for the implementation of proper preventive health care and management.. In this study, we describe the pattern of congenital malformation and associated risk factors in a secondary care hospital of Malda,West Bengal in 1 yr A descriptive cross sectional study was done.Data was collected from labour room and OT and congenital malformations was diagnosed clinically and with the help of proper investigations when necessary.Out of 8247 new born(both live and still births) 206 had congenital anomaly.Malformations affecting musculoskeletal system was commonest(35.92%)There was strong association of congenital anomaly with parental consanguinity,positive family history,low birth weight(,2500gm) and pretem delivery(37wks of gestation). By improvement in antenatal, postnatal diagnosis, early referral to tertiary hospital and early intervention most of these newborns can be saved.

KEYWORDS

Congenital anomaly, new born, congenital malformation.

INTRODUCTION:

Congenital anomalies are important causes of mortality and morbidity in childhood. WHO(1972) stated that congenital malformations should be confined to structural defects at birth [1].According to WHO(2012) congenital anomaly can be defined as structural and functional anomalies, including metabolic disorders, which are present at birth[2]. Congenital anomalies are important cause of neonatal mortality both in developing and developed country ad may affect single or multiple system.Consanguinity, maternal malnutrition or obesity, positive family history, low birth weight; prematurity are the important risk factors of congenital malformation. Birth defects are a diverse group of disorders of prenatal origin that can be caused by single gene defects, chromosomal disorders, multifactorial inheritance, environmental teratogens and micronutrient deficiencies. Maternal infections such as rubella, maternal illnesses like diabetes mellitus (DM), iodine and folic acid deficiency, exposure to medicinal and recreational drugs including alcohol and tobacco, certain environmental chemicals, and doses of radiation are all other factors that cause birth defects [3]. A better understanding and increased knowledge of the epidemiology of children with birth defects is a high priority due to the maternal and child health indicators in healthy people[4].Public awareness should be cratered about prevalence, risk factors of congenital malformation and early prenatal diagnosis and management of congenital anomaly will decrease fetal loss and childhood morbidity.

MATERIALS AND METHODS:

A hospital based descriptive case-control study was conducted in Chanchal multispecialty hospital,Malda,West Bengal in 1 year(April 2018-March 2019) All babies(both live and stillborn)were born in this period are included in the study. After taking proper consent both the mother and her baby were examined immediately after birth by pediatritian.A detailed history was taken and examination of baby was made. Twin deliveries were excluded. All neonates identified with CAs were examined clinically. Photographs, radiographs, ultrasound examinations, echocardiography, were included whenever recommended. Downs and other syndromes were diagnosed clinically and chromosomal analysis was suggested. The newborns with congenital anomalies were referred to tertiary care hospital for further management.

The CAs were classified according to the ICD-10 system, Data was entered into excel sheet. Results were analyzed by simple statistical techniques recording number and percentage of cases. The two groups were compared using Chi-square test. $P<0.05$ was considered significant.

RESULT ANALYSIS: During this 1-year study, there were 8247 deliveries. Total no of live births 8031 and still birth 216.Total no of congenital anomalies 206(out of which 150 new born had single birth defect and 56 had multiple birth defects.

Table 1: System wise distribution of Congenital anomalies

System type	Total No	%	Malformation	No
Cardiovascular system	32	15.53%	PDA ASD VSD Tetralogy of fallots	8 6 16 2
CNS	20	9.71%	Meningomyelocele Encephalocele Anencephly Hydrocephalus Cyclocephaly	8 2 6 3 1
Urogenital system	22	10.68%	Ambiguous genetalia Hydronephrosis Hypospedius Epispedius Congenital hydrocele Undescended testis	4 1 9 3 2 3
GIT	42	20.39%	Tracheo-oesophageal fistula Diaphragmatic hernia Tongue-tie Cleft lip Cleft palate Cleft lip Cleft palate Imperforate anus Gastrochisis Omphalocele Duodenal atresia	2 1 4 16 5 5 4 3 2 0
Skin	6	2.91%	Preauricular tags Albinism	2 4
Musculoskeletal system	74	35.92%	Polydactyly Syndactyly CTEV(congenital talipes equinovarus) Calcaneovalgus Phocomelia Sirenomelia(Mermaid syndrome) Spina-bifida Multiple defects	13 7 33 6 4 1 4 6
Miscelleneus/syndrome	10	4.85%	Downs Others	8 2

Table 1 : Summarizes the pattern of congenital malformations seen in neonates. The **musculoskeletal system was the most commonly affected (35.92%),** followed by the gastrointestinal system (GIT) (20.39%), Urogenital system(10.68%),cardiovascular system (15.53%), CNS (9.71%), Miscellaneous/syndrome (4.85%) and Skin (2.91%). In our study we also found **some unusual congenital anomalies –Cyclocephaly**(a rare form of holoprosencephaly,where embryonic prosencephalon fail to divide the orbit of the eye into two cavities) and **Sirenomelia**(anomalies of lower spine and lower limbs-affected infants are born with partial or complete fusion of the legs).

Table 2- Maternal and fetal risk factors associated with congenital anomaly at birth

Factors	Total No	No of congenital anomaly	%	P value (< 0.05 is significant)
Maternal age(yrs)				P value is
<20	393	10	2.54%	.929105
20-35	6904	174	2.47%	Not significant
>35	950	22	2.32%	
Parental consanguinity				P value is
Consanguineous	1429	49	3.42%	.01312-
Non-consanguineous	6818	157	2.30%	significant
Family history				P value
Positive	885	59	6.67%	<.00001.
Negative	7362	147	1.97%	significant
Sex of baby				P value is
Male	4302	111	2.58%	.616923
Female	3945	95	2.41%	Not significant
Birth weight(<2500gm->LBW)				P value <.00001.
<2500gm	3372	118	3.5%	significant
>2500gm	4875	88	1.81%	
Terms of pregnancy(<37wks gestation considered as pre term)				P value .000582 Significant
Preterm	2762	92	3.33%	
Term	5485	114	2.08%	
Mode of delivery				P value .853755
Vaginal(Normal delivery)	6498	162	2.49%	Not significant
Caesarean section(C/S)	1556	38	2.44%	
Forceps delivery	193	6	3.11%	

Table 2 Summarizes the maternal and fetal risk factors associated with congenital malformations at birth. Maternal age 20-35 yrs was associated with increased incidence of CAs, but it was not statistically significant. There was significantly more congenital malformations among neonates with parental consanguinity than among babies without parental consanguinity (P<0.05).. There were significantly more no of congenital anomaly in newborn with positive family history (p value <.00001). There was no significant difference in the frequency of CAs in male or female babies. More no of CA were found in preterm newborn than term (p value significant).

Congenital anomalies of Musculoskeletal system

Figure 1: CTEV

Fig 2: Sirenomelia (Mermaid Syndrome)

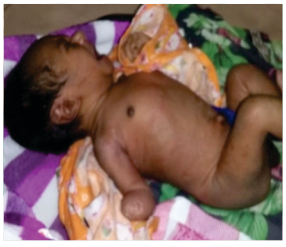

Fig 3: Phocomelia

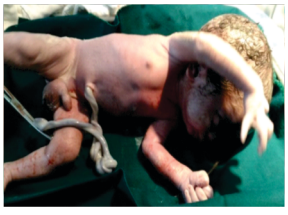

Fig 4: Hand Anomaly

Congenital anomalies of GIT

Fig 5: Cleft lip with cleft palate

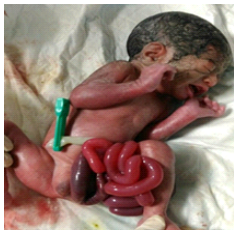

Fig 6: Gastrochisis

Congenital anomalies of CNS

Fig 7: Meningomyelocele

Fig 8: Encephalocele

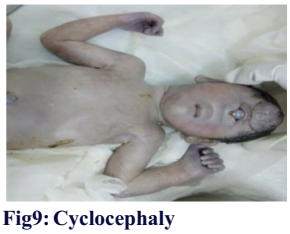

Fig9: Cyclocephaly

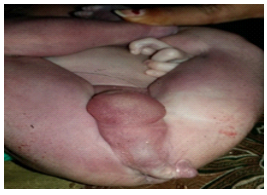

Fig 10: Ambiguous genitalia

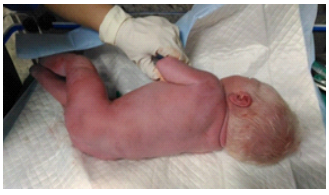

Fig 11: Albinism

DISCUSSION:

In this hospital-based prospective study, incidence of CAs 2.5%(total no of CA is 206 in 8247 newborn-both live and still born) These findings are in accordance with the results of the European network of population-based registers for the epidemiological surveillance of

congenital anomalies (EUROCAT) (2.4%)[5] Jones (2.3%)[6]and Jehangir *et al*[7] in a tertiary care hospital, who reported an incidence of 2.9%. In this study, the most common system involved was the musculoskeletal system **(35.92%),** followed by the gastrointestinal system (GIT) (20.39%),Urogenital system(10.68%),cardiovascular system(15.53%), CNS (9.71%), Miscellaneous/syndrome (4.85%) and Skin (2.91%). These findings were comparable to the studies conducted by other investigators in Saudi Arabia,[8] and Iran [9] Some studies, however, recorded a higher incidence of CNS and CVS malformations followed by GIT and musculoskeletal system.[10,11]. Prajkta Bhide, Anita Kar in 2018 intheir studyfound that two common congenital anomalies are Talipes and Anencephaly[12]

The current study found that CAs prevailed in babies of consanguineous marriage, those with a family history of an anomaly,in low birth weight and in preterm babies. On the other hand, maternal age and sex of the babies and mode of delivery were not significantly associated with the development of CAs. In Saudi Arabia, Alshehri reported a high frequency of major CAs and stated that it might have resulted from the common habit of consanguineous marriages which has led to the preservation of rare mutations.[8], Anjum *et al.* reported that the majority of neonates with CAs are born to mothers aged 25–38 years.[13]. Sozan K Ameen,Shahla Kareem suggested significant association between family history and congenital anomaly [14]. The association of LBW and malformations has been well documented in other studies.[15] Regarding the gestational age of the malformed neonates, we found a significantly increased incidence of CAs among preterm neonates than full term. Khatemi F et al added that the risk factors associated with prematurity has proven increased frequency of CAs.[10]

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