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"The Pattern of Congenital Malformation in Newborn and Its Outcome- A Hospital Based Study"

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ABSTRACT:
BACKGROUND*: Congenital malformations are common cause of neonatal admission in NICU. Its early detection and timely intervention is necessary to reduce morbidity and mortality in neonates.*
OBJECTIVE*: To find out the pattern of congenital malformation in newborn and its outcome in a tertiary care hospital, RIMS Ranchi.*
METHODOLOGY*: This study was a hospital based prospective study conducted from April 2018 to February 2019 in Department of Pediatrics and Neonatology, Rajendra Institute of Medical Sciences(RIMS), Ranchi. Neonates with congenital malformation were diagnosed by clinical examination and appropriate investigations. Neonates with minor anomalies were excluded. Medical and Surgical interventions were done accordingly.*
RESULTS*: Out of total 2545 Neonates admitted in Neonatal ICU during the study period, 28 Neonates were diagnosed having congenital malformation ; giving an overall incidence of 1.1%. There were 17(60.7%) Male and 11(39.3%) Female. The most common malformation were there of CNS (35.7%) followed by GI System(21.4%).*
CONCLUSION*: CNS malformation appeared to be more common congenital malformation and by improvement in antenatal and postnatal diagnosis, early referral to tertiary hospital and early intervention can save most of these Infants.*

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I. Introduction

Congenital malformations are frequently found in Neonates admitted in NICU.It is detected either at the time of birth/ admission or within few days /weeks of admission by the investigations like USG and ECHO, X ray done in neonates, suspected for congenital malformation.

Congenital malformation is the common cause of morbidity and mortality in our country and its early detection, prevention of birth defect and proper management is necessary to reduce the morbidity and mortality in a new born.Human malformations are caused by interaction of genes and environmental factors.[1]

Congenital malformation can be defined as abnormality of physical structure or form seen at birth or few days/week after birth that has surgical , medical or cosmetic relevance.

As structural and functional anomalies occur during intrauterine life and can be identified prenatally, at birth or sometimes few days/weeks after birth.[2]

Community based study by Indian council of medical research(ICMR) has reported that congenital malformations accounted for 6.6% of neonatal death in rural as well as urban slum communities.[3]

With the advancement of antenatal ultrasonography and availability of trained pediatric surgeon the congenital malformation are identified and treated well.

Maternal ultrasonography can diagnose many malformations prenatally as early as second trimester of life[4][5] and intervention of congenial malformation in the intrauterine life is gaining popularity now a days. This type of study was conducted in view to find out pattern of congenital malformation affecting various organ system and its final outcome.

II. Methodology

This hospital based prospective study was carried at neonatal ICU, RIMS Ranchi during the study period of 10 months [from 13-04-2018 to 12-02-2019].Out of two thousand five hundred forty five total admission during study period,twenty eight neonates with congenital malformation were diagnosed by clinical examination and appropriate investigations. Detailed maternal history, age, parity, antenatal check-up, maternal illness during pregnancy, obstetric history particularly of drug intake or, radiation exposure, any complication during pregnancy and labor were noted. Medical and Surgical intervention was done accordingly. Neonate's

sex, birth weight, morbidity and mortality were noted. The results were analyzed by simple statistical techniques.

III. Results

Out of 2545 neonates admitted in Neonatal ICU during the study period (from 13-4-2018 to 12-2-2019), 28 neonates were having congenital malformation giving an overall incidence of 1.1%.

There were 17 (60.7%) male and 11(39.3%) females. All patients were managed medically and surgically and few of them referred to higher specialized centres after conservative treatment and stabilization.

The most common malformation were there of CNS (35.7%) followed by gastrointestinal system (21.4%).

Regarding outcome 15 (53.6%) neonates were operated successfully and managed well and finally discharged; 6(21.4%) referred to higher specialized centre; 3(10.7%) left against medical advice and 2 (7%) died preoperatively due to various reasons and 2(7%) died post operatively.

Table 1: Type of congenital malformation observed(n=28)

SYSTEM	MALFORMATION	NUMBER	PERCENTAGE
CNS		10	35.7
	ANENCEPHALY	4	14.3
	HYDROCEPHALUS	3	10.7
	MENINGOMYOCELE	2	7.1
	ENCEPHALOCELE	1	3.6
GIT		6	21.4
	TEF	3	10.7
	EXOMPHALUS	2	7.1
	CDH	1	3.6
CVS		4	14.2
	PDA	2	7.1
	CONGENITAL CHD	1	3.6
	CONGENITAL ACYANOTIC HEART DISEASE	1	3.6
MUSCULOSKELATAL		3	10.7
	TALIPES	2	7.1
	OSTEOGENESIS IMPERFECTA	1	3.6
CRANIOFACIAL		2	7.1
	CLEFT LIP/PALATE	3	10.7
GENITOURINARY		2	7.1
	B/L HYDRONEPHROSIS	1	3.6
	AMBIGUOUS GENITALIA	1	3.6
OTHERS	DOWN SYNDROME	1	3.6

Table 2: Congenital malformations in relation to maternal and fetal factor

FACTOR			**Total**	**No.**	**%**
MATERNAL	AGE	<20YR	432	4	0.92
		20-35 YRS	1937	21	1.08
		>35YRS	176	3	1.70
	GRAVIDA	≤3	2211	20	0.90
		≥4	334	8	2.40
	H/O DRUG ABUSE OR RADIATION EXPOSURE	YES	94	6	6.38
		NO	1334	10	0.75
		NOT KNOWN	1117	12	1.07
	H/O REGULAR ANC AND USE OF FOLIC ACID	YES	810	5	0.62
		NO	1735	23	1.32
FETAL					
	SEX	MALE	1425	17	1.19
		FEMALE	1120	11	0.98
	BIRTH WEIGHT	≤2500GM	732	13	1.77
		≥2500GM	1813	15	0.82

IV. Discussion

The overall incidence of congenital malformation in our present study was 1.1%. A national collaborative community based study by Indian council of medical research reported that congenital malformation accounted for 6.6% of neonatal deaths in the rural as well as urban slum community. Our hospital is a tertiary care hospital. The higher incidence of congenital malformation seen in our institution may be

because our hospital caters the patients from primary health centers and some other hospitals in the periphery. Though there is another fact that many neonates born with congenital malformation in the periphery dies before admitted to hospital.

The pattern of congenital malformation may vary from region to region.In our study the most common pattern of congenital malformation was CNS defect. Male predominance was present in our study. Mortality and morbidity due to congenital malformation can be because of sepsis, prematurity or delay in treatment due to late admission in the hospital due to lack of money, illiteracy and lack of awareness. The life threatening congenital malformation must be identified by thorough clinical examination and investigations because early diagnosis and surgical correction or palliation of these infants offer the best chance of survival.

These study definitely helps to know the pattern of congenital malformation and there outcome in this area so that , strategy for prevention early detection and timely management can be done.

V. Conclusion

CNS malformation appeared to be more common congenital malformation and by improvement in antenatal and postnatal diagnosis, early referral to tertiary hospital and early intervention can save most of these infants.

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