

Study of congenital Malformations in New born Babies of North Karnataka

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Abstract

Background: Congenital malformation is defects of morphogenesis of organs or body regions identifiable during intra-uterine life or after birth. These malformations need to be rectified by paediatric or neonatal surgeons because malformations lead to reduced life expectancy and functional impairment of body. **Method:** Out of 985 newborns 26 (2.63%) infants having congenital malformations were studied, conformed by Echocardiography x-ray cranial and abdominal USG was performed when indicate. **Results:** 2 (7.6%) musculo- skeletal, 6 (23.7%) CVS, 4 (15.3%) GIT, 5 (19.2%) CNS, 6 (23%) UGS, 2 (3.69%) Respiratory, 1 (3.84%) skin malformations were studied. Associated risk factors were birth weight, gestation, maternal age, parity, number of foetus, mode of delivery, consanguinity were major criteria. **Conclusion:** This pragmatic study will definitely help paediatrician/ Neonatologists to know the pattern of malformations and the various gestational and familial factors in relation to congenital anomalies and early diagnosis and timely management.

Keywords: Echocardiography, USG, x-ray, LBW, CNS, CVS, GIT

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Introduction

Congenital malformations are defects of morphogenesis of organs or body regions identifiable during intra-uterine life or after birth[1].All races cultures and socio-economic groups are affected. Although they comprise a leading cause of infant mortality globally, they also lead to chronic illness and long term disability, which often constitute enormous challenges for parents, caregiver's, health care systems and the affected individuals[2].In addition, congenital malformations account for majority to infanticide cases globally, as most of these children are killed or left to die either by parents or enforcers of cultures, which abhor their existence[3].

The expectation of every parent is to hold in their arms a bundle of joy in the form of a healthy new born after the period of pregnancy. Therefore, the birth of a child with a malformation or prenatal diagnosis of such is often devastating. The parents thus experience several psychological, emotional, social and economic challenges while caring the child.

Children with major congenital malformation often require multiple complex surgical procedures and technologically advanced monitoring devices. Hence attempt is made to evaluate the various malformations so that the paediatric surgeries can enable such infants to lead independent, healthy and dignified life in future.

Material and Methods

985 new born babies at KBN teaching and general hospital Kalaburagi 585105, Karnataka were studied.

Inclusive Criteria

Out of 985 new born babies 26 (twenty six) had congenital malformations were selected.

Exclusion Criteria

All still born babies are excluded from studies.

Method

Physical examination was performed in every new born babies and clinically recognisable malformations were confirmed by Echocardiography, x-ray, cranial and abdominal ultra-sonography was performed when indicated.

Detailed antenatal and maternal history including the age of mothers, parity or the history of consanguinity was also noted. The both weight (>2.5 kg is normal) and <1.5 kg is low Birth weight (LBW) and very low birth weight Babies born at <37 completed weeks (ie. <259 days) calculated from 1st day of last menstrual period were considered as premature.

Duration of study was August-2019 to January-2021.

Statistical analysis

Various anomalies, organ wise anomalies and associated were classified with percentage. Data analysis was performed in SPSS software. The ratio of male and female was 2:1

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Observation and Results**Table 1: Study of distribution of congenital anomalies – 2 (7.69%)**

- A) Musculo- skeletal consist 1 cleft-lip, 1 cleft palate
 B) Cardio vascular system (CVS) – 6 (23.07%) had 3 tetralogy of fallot, 3 ASD (Atrial Septal Defect)
 C) GIT – 4 (15.3%) had, 2 Omphocele, 2-anorectal malformation
 D) CNS – 5 (19.2%), 3-Hydrocephalus, 1-Meningiomyelocele, 1-Anencephaly
 E) Uro-genital (UGS) – 6 (23.07%) had 3-Ambiguous genitalia, 2-congenital hydrocele, 1-Hydronephrosis
 F) Respiratory – 2 (7.69%), 1-Larangiomalacia, 1-Diaphragmatic hernia.
 G) Skin – 1 (38.4%) haemangioma

Table 1: Study of distribution of congenital anomalies

Total No. of patient: 26

Sl No	Particular	Number	Percentage
A	Musculo skeletal	2	7.69
	Cleft-lip	1	
	Cleft Paalate	1	
B	Cardio vascular system	6	23.07
	Tetralogy of Fallot	3	
	ASD (Arterial Septal Defect)	3	
C	G.I.T	4	15.3
	Omphocele	2	
	Ano-rectal Malformation	2	
D	Control Nervous system	5	19.2
	Hydrocephalus	3	
	Meningiomyelocele	1	
	Anencephaly	1	
E	Uro-genital system	6	23.01
	Ambiguous genitalia	3	
	Congenital hydrocele	2	
	Hydro-nephrosis	1	
F	Respiratory system	2	7.69
	Larangio Malacia	1	
	Diaphragm hernia	1	
G	Skin	1	3.84
	Haemangioma	1	

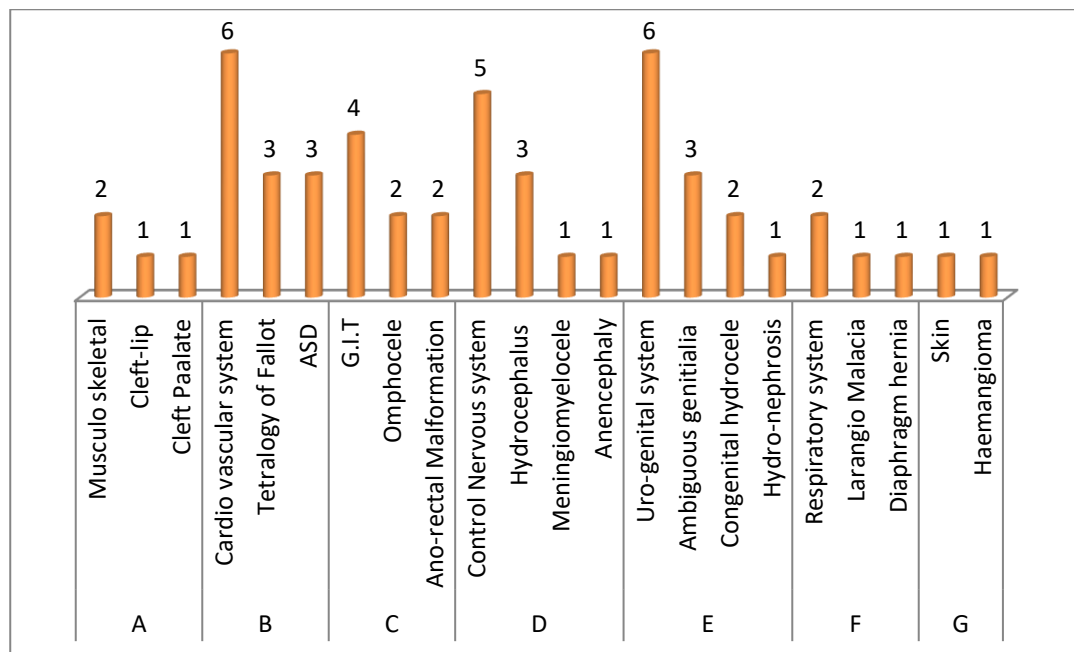
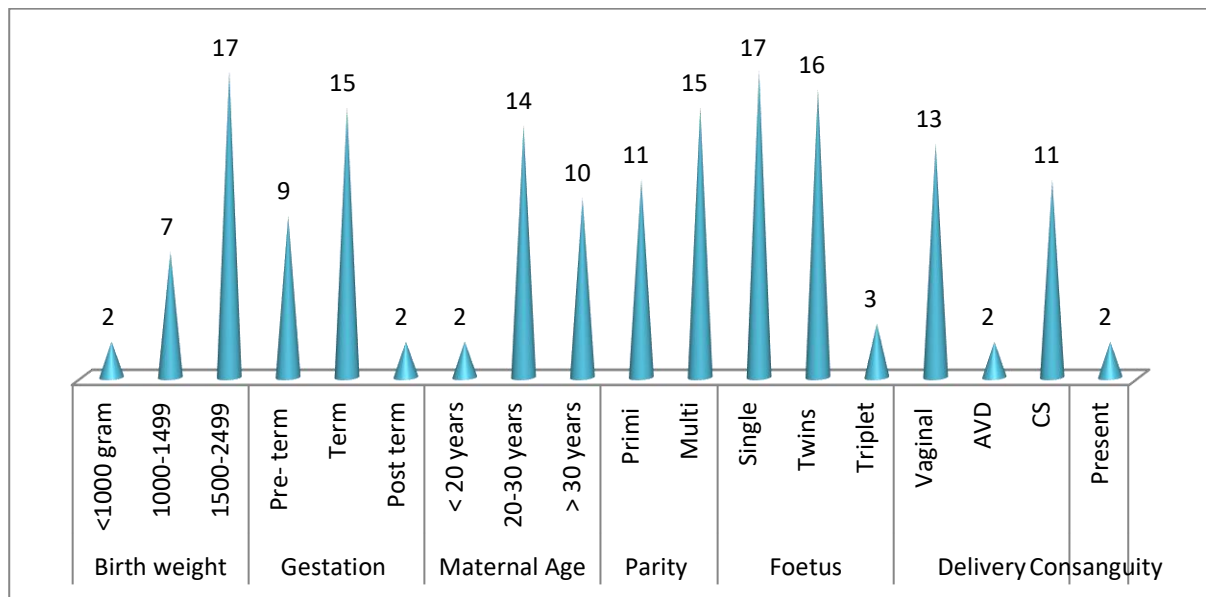
**Fig 1:Study distribution of congenital anomalies**

Table-2 In Birth weight – 2 (7.69%) < 1000 grams, 7 (26.9%) 1000=1499, 17 (66.3%) 1500-2499.

- Gestation – 9 (24.6%) pre-term, 15 (57.6%) Term, 2 (7.69%) post-term
- Maternal age – 2 (7.69%) <20 yrs, 14 (53.8%) 20-30 years, 10 (38.4%) >30 years
- Parity – 11 (42.3%) primi, 15 (57.6%) multi parous
- Number of Foetus – 17 (65.3%) single, 6 (23.07%) twins, 3 (11.5%) triplet.
- Mode of delivery – 13 (50%) vaginal, 2 (7.69%) AVD, 11 (42.3%) had CS

Table 2: Associate between congenital Malformation and risk factors

Particular	Groups	No. of anomalies	Percentage %
Birth weight	<1000 gram	2	7.69
	1000-1499	7	26.9
	1500-2499	17	65.3
Gestation	Pre- term	9	34.6
	Term	15	57.6
	Post term	2	7.69
Maternal Age	< 20 years	2	7.69
	20-30 years	14	53.8
	> 30 years	10	38.4
Parity	Primi	11	42.3
	Multi	15	57.6
No. of Foetus	Single	17	65.3
	Twins	16	23.07
	Triplet	03	11.5
Mode of Delivery	Vaginal	13	50
	AVD	2	7.69
	CS	11	42.3
Consanguinity	Present	2	7.69

**Fig 2:Associate between congenital malformation and risk factors****Discussion**

Present study of congenital malformations in new born babies of north Karnataka had 2 (7.69%) muscle – skeletal, 6 (23.7%) CVS, 4 (15.3%) GIT, 5 (19.2%) CNS, 6 (23.07%) UGS, 2 (7.69%) Respiratory, 1 (3.84%) Skin (Table-1). The associate risk factors were 2 (7.69%) both weight was < 1000 grams, 7 (26.9%) had 1000-1499, 17 (65.3%) had 1500-2499 weight of babies. Gestation – 9 (34.6%) Pre-term, 15 (57.6%) term, 2 (7.69%) post-term, Maternal age – 2 (7.69%) were < 20 years, 14 (53.8%) 20-30 years, 10 (38.4%) >30 years. Parity – 11 (42.3%) were primi, 15 (57.6%) were multiparous. No of foetus – 17 (66.3%) were single, 6 (23.07%) were twins, 3 (11.5%) were triplets, mode of delivery was 13 (50%) vaginal, 2

(7.69%) AVD, 11 (42.3%) CS, 2 (7.69%) had consanguinity (Table-2). These findings are more or less in agreement with previous studies[5-7].The malformations include chromosomal abnormalities and single gene defect, speculatively by coding for an anomaly or mutation. These genetic mutation results in higher risk of birth defects including cardiac and Uro-genital system[8]. Moreover environmental factors play hazardous role when pregnant women are exposed to radiation, alcohol, tobacco, pesticides and drugs such as anti epileptic, anticoagulants leads to congenital malformations they are termed teratogens (It is derived from Greek words, toratos=monster and gen-producing)

Nutritional factors also play vital role in the congenital malformation like folic acid vitamins, minerals such as zinc. Especially folic acid deficiency leads to malformation of neural tube[9]. Infectious diseases such as influenza rubella, syphilis HIV, Zika virus, also associated with foetal malformation. In addition to this maternal age has also found the play a role as advanced age has increased risk of chromosomal, abnormalities which results into Down syndrome, Pierre Robin syndrome etc. The congenital malformations can be classified as histological changes, pathogenesis or medical and social consequences. The malformations are the anomalies that reduce life expectancies and cause significant functional impairment such as congenital heart disease and bladder extrophy.

Summary and Conclusion

The congenital malformations associated with morbidity, psychological, effects and high mortality rates. Campaign and public enlightenment programmes should be conducted to educate the people on the causes and risk factors for congenital malformations. Preventable causes such as avoid alcohol consumption and smoking during pregnancy, taking folic acid and minerals like Iron, Zinc in their food supplements and to avoid exposure to radiation. But these studies demands further genetic, patho-physiological, embryological, hormonal, nutritional studies because exact pathogenesis of intra-embryonic environment still unclear.

- This research paper is approved by ethical committee of KBN Medical College Kalburgi-585101, Karnataka.

References

1. Corsallo G, Glufire M – Congenital malformations J. Matern Foetal Neonatal Med. 2012, 25, 25-29.
2. Kumar P, Burton B – Congenital malformations evidence based evaluation and management LISA: MC Grani Hill. Professional and 2007.
3. Singh SB, Pharjoubam M, Devi TM – Infant with congenital anomalies born to die? J. Indian Forensic Science 2015;37:308-310.
4. Tusano S- - Experience of parents with congenital anomalies at oshakale intermediate hospital (Doctoral dissertation) Oshana Region University of Nambia 2015.
5. Spranger J. Benirschkeek – Errors of morphogenesis: concepts and terms J. pediatr. 1982, 100(1), 160-5.
6. Grover N – Congenital malformations in simla. Ind. J. Pediatr. 2000, 67(4), 249-51.
7. Kushi AM, Zeyghami B – The effect of consanguineous marriages on congenital malformations J. Res. Med. Sci. 2005, 10: 298-301
8. Maskey B, Hobbs C – Folic acid and the decline in Neural-tube defects in Arkansas. J. Ark med. Soc. 2007, 130, 247-250.
9. De Paula Freitas B – Ocular findings in infants with Microcephaly associated with Zika virus congenital infection in Brazil. JAMA Ophthalmol. 2016, 134: 529-555.

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