Original Research Article

# 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, consanguity 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



## 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 devasting. 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.

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## 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 form 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

## Observation and Results

**Table-1:** Study of distribution of congenital anomalies – 2 (7.69%)

**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 | 3 | |

| | | | |
|---|---|---|---|
| | (Arterial Septal Defect) | | |
| 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 genitialia | 3 | |
| | Congenital hydrocele | 2 | |
| | Hydro-nephrosis | 1 | |
| F | Respiratory system | 2 | 7.69 |
| | Larangio Malacia | 1 | |
| | Diaphragm hernia | 1 | |
| G | Skin | 1 | |
| | Haemangioma | 1 | 3.84 |

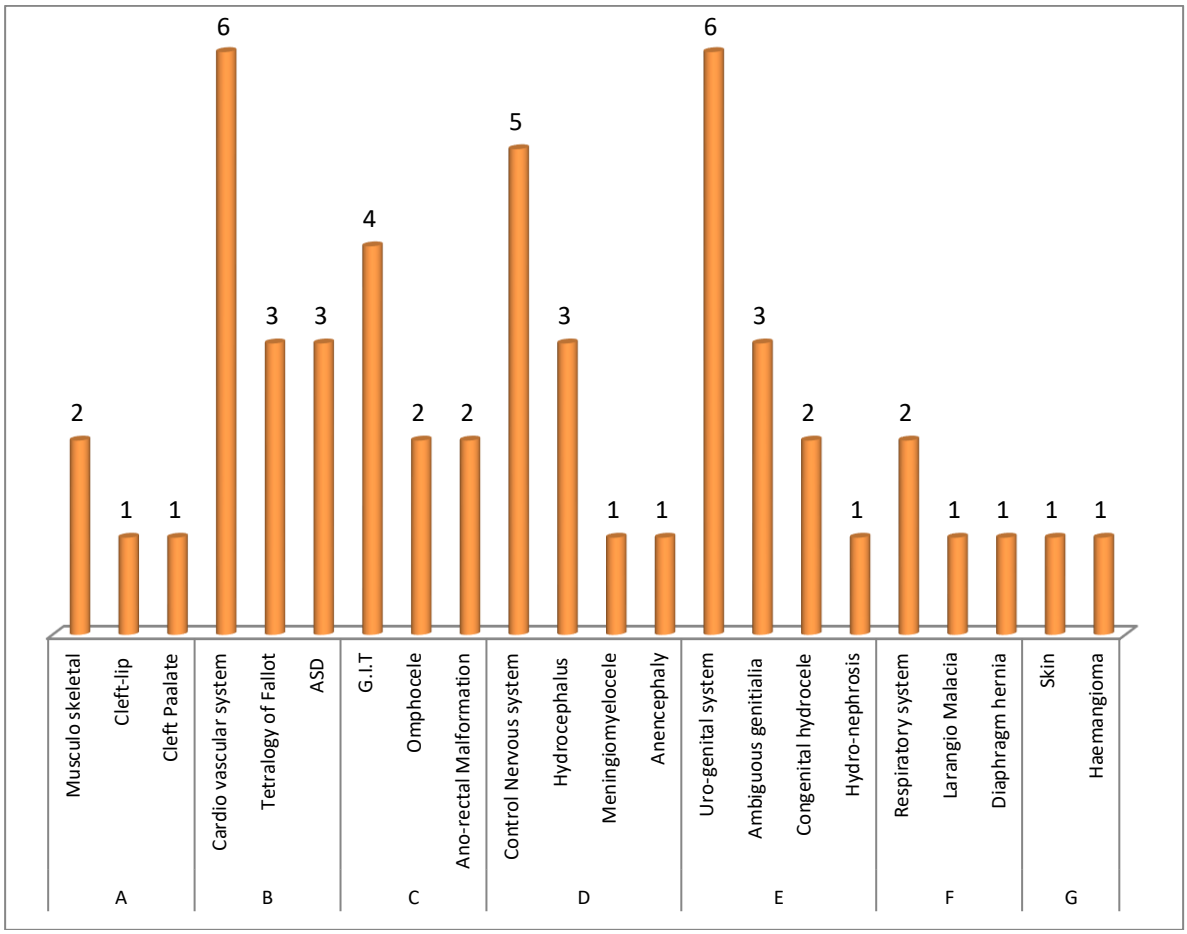


**Fig 1:Study of distribution of congenital anomalies**

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-Hydroaphalus, 1-Meningiomyclocele, 1-Anancephaly
E) Uro-genital (UGS) – 6 (23.07%) had 3-Ambigious genitalia, 2-congenital hydrocele, 1-Hydronephrosis
F) Respiratory – 2 (7.69%), 1-Larangiomalacia, 1-Diaphragmatic hernia.
G) Skin – 1 (38.4%) haemangioma

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

**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 |
| Consanguity | Present | 2 | 7.69 |

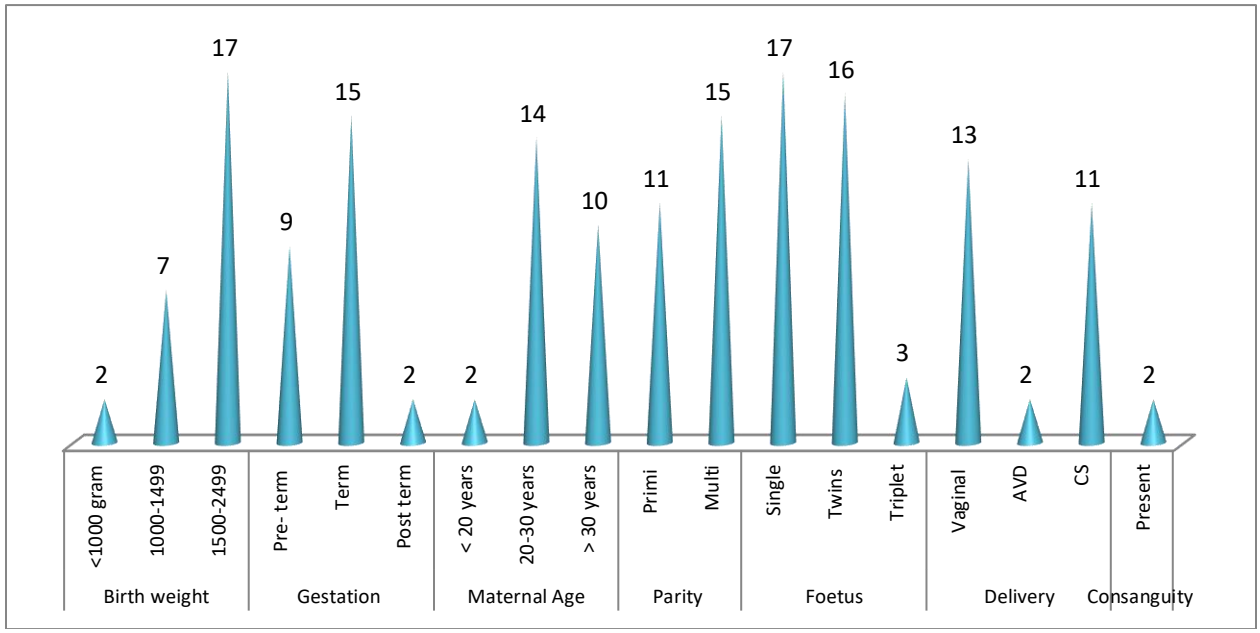


**Fig 2:Associate between congenital malformation and risk factors**

- 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

**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 consanguity (Table-2). These findings are more or less in agreement with previous studies[5,6,7]. 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[10]. 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 expectances 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.

**Conflict of Interest: Nil**

**Source of support: Nil**

**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. Pal Abhay Charan.malformation.Iron J. of pead. 2015, 15: 315-20.
7. Grover N – Congenital malformations in simla. Ind. J. Pediatr. 2000, 67(4), 249-51.
8. Kushi AM, Zeyghami .The effect of consanguineous marriages on congenital malformations J. Res. Med. Sci. 2005, 10: 298-301
9. Maskey B, Hobbs C – Folic acid and he decline in Neural-tube defects in Arkanasas. J. Ark med. Soc. 2007, 130, 247-250.
10. De Paula B. Ocular findings in infants with Microcephaly associated with Zika virus congenital infection in Brazil. JAMA Opthalmol. 2016, 134: 529-555.