

Incidence and Distribution of Congenital Anomalies Clinically Detected at Birth in Neonates from the Population of Ladakh Region of India

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Abstract

Congenital anomalies are important cause of neonatal morbidity and mortality. It can be defined as structural and functional abnormality including metabolic disorders present at birth. It is the major health problem after infection and deficiency disease that cause remarkable proportion of mortality and morbidity in newborns. This hospital based prospective study was conducted for the period of two years from 1st June 2017 to 30 May 2019. During the period of two year there were total of 686 neonates admitted to the neonatal intensive care unit (NICU) for various reasons with the ratio of 1.34: 1 male and female. From the total six hundred eighty six neonates admitted, twenty nine neonates had congenital anomalies with percentage of 4.22%. The distribution of congenital anomalies include congenital anencephaly, clubfoot, multiple congenital anomalies, congenital heart disease, multiply bone deformities, cleft lip with or without cleft palate, metabolic disorder, Pierre robin syndrome. In this study, it was observed that female babies were more affected by congenital anomalies than male infants. The three most common types of anomalies detected in the study were cleft lip with or without cleft palate (27%), clubfoot (17%) and anencephaly (13%).

Keywords: Congenital anomalies, incidence, prevalence, birth defects

Introduction

Congenital malformations also known as birth defects are structural or functional anomalies of prenatal origin which result from a defect or abnormality in the process of development (Ochieng *et al.*, 2011). It can also be defined as abnormality of physical structure or form seen at birth or few weeks after birth (Hudgins and Cassidy, 2008). It is a major health problem and is responsible for a remarkable proportion of mortality and morbidity in newborns. The incidence of congenital anomalies varies from 3% for major congenital anomalies and 12-15% for minor anomalies and the major congenital anomalies account for 8–15% of perinatal and 13–16% of neonatal deaths in India (Datta and Chaturvedi, 2000). The incidence rises to further 5% if anomalies detected later in childhood (Shah and Pensi, 2013). The aim of this study is to provide information on the incidence and distribution of congenital anomalies in the

Trans Himalayan region of Ladakh-India as it is the important cause of neonatal mortality after improving the infections and nutritional deficiency disease.

Material and Methods

This descriptive case series, hospital based prospective study was conducted for the period of two years from 1st June 2017 to 30 May 2019 at district hospital Kargil Ladakh, India. The data of all the admitted neonates was analysed along with consulting admission register of neonatal intensive care unit (NICU). The diagnosis of the patients was made mainly on the basis of the clinical ground by paediatrics with the help of available necessary laboratory investigation report. The primary problem was considered as final for diagnosis even if the baby developed any other problems or disease.

The study was approved by Ethical committee of the Sher-i-Kashmir Institute of Medical Science Srinagar (Deemed University), Jammu and Kashmir, India.

Results

During the period of two year there were a total of 686 neonates admitted to the NICU for various reasons. Among 686, three hundred ninety two (57.1%) were male and two hundred ninety four (42.8%) female with the ratio of 1.34: 1.

There were 392 new born male, out of which 18 had congenital anomaly (4.59%) and out of 294 new born female babies, 16 had congenital anomaly (5.44%) (**Table 1**). Among three hundred ninety two males two hundred seventy one were inborn and one hundred twenty one were out born. Among 294 females 201 were inborn while as 93 were out born. Four hundred seventy two (68.8%) babies were born in the main district hospital (NICU) and two hundred fourteen (31.1 %) were born from peripheral hospitals referred as home delivery cases (**Figure 1**).

Table 1: Gender wise in admission and incidence of congenital anomalies at NICU

Sex	Admission	percentage	Number of anomalies	percentage
Male	392	57.1	18	4.59%
Female	294	42.8	16	5.44%
Total	686		34	

Among the total six hundred eighty six neonates admitted, twenty nine neonates had congenital anomalies with percentage of 4.22%. The distribution of congenital anomalies include congenital metabolic disorder, pierre robin syndrome, congenital anencephaly, clubfoot, multiple congenital anomalies, congenital heart disease, cleft lip with/without cleft palate and down syndrome (**Figure 2**). Out of 34 affected neonates, 52% were male babies and 47 % were female babies. It was also observed that, 70% of neonates with congenital anomalies had birth weight between 2.5 to 3.5 kg. 17% of the babies had birth weight less than 2.5 kg and 8 % were weighing more than 3.5 kg (**Table 2**)

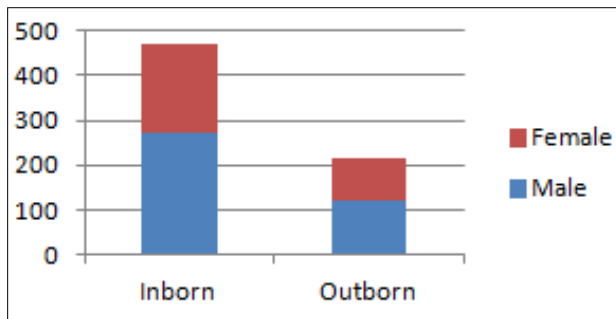


Figure 1: Gender wise inborn and outborn distribution of the admitted neonates at NICU

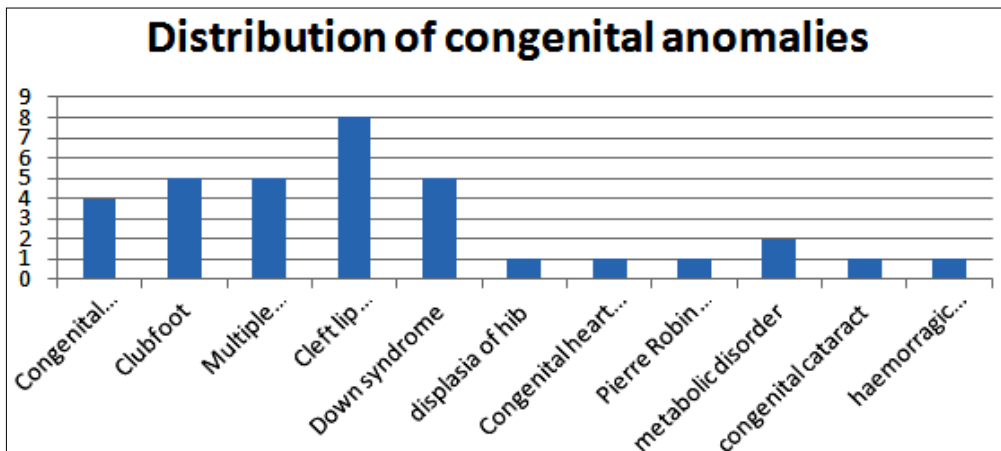


Figure 2: Distribution and incidence of congenital anomalies clinically detected at birth

Table 2: Association of gender, gestation age and weight of neonates with congenital anomalies

Parameter		percentage
Gender	Male	52%
	Female	47%
Gestation age	Pre term	17%
	Term	82%
Weight	<2.5 kg	20%
	2.5 –3.5 kg	70%
	>3.5 kg	8%

Discussion

The incidence, distribution and prevalence of congenital anomalies may vary over the period of time with the socio economic condition reflecting the genetic and environmental factors. Congenital anomalies are becoming an important cause of neonatal mortality after rectifying the infections and nutritional deficiency disease (Shamnas *et al.*, 2013).

In India, birth defects cause deaths of around 7% children under the age of 5, with perinatally affected being 9.5 % and stillbirth defects contributing 9.9% (WHO, 2013). The rate of congenital anomalies in India ranges from 6-7% leading to approximately 1.7 million congenital anomalies every year. As a result India ranks 38th amongst all nations of the world in occurrence of congenital anomalies (Christianson *et al.*, 2006). The prevalence of these anomalies differs across the country. This study showed that incidence of congenital anomalies is 4.22% (29 out of 686) of total neonates admitted in the NICU.

The distribution of congenital anomalies include metabolic disorder, pierre robin syndrome, congenital anencephaly, clubfoot, multiple congenital anomalies, congenital heart disease, multiply bone deformities, cleft lip with/without cleft palate. In this study it was observed that male babies were more affected by congenital anomalies then female babies as also confirmed by other study (Sarkar *et al.*, 2013).

The three most common type of anomaly detected in the study was cleft lip with or without cleft palate (27%), clubfoot (17%) and anencephaly (13%). In India the overall pooled birth prevalence of facial clefts is 1.3 per 1000 total birth and 4.5 per 1000 total birth in neural tube defects (Allagh *et al.*, 2015). Gupta *et al.* (2012) and Mashuda *et al.* (2014), found the commonest anomaly was nervous system malformations with 41.9% incidence.

Conclusion

This study has highlighted the prevalence and types of congenital anomalies that are seen in the Kargil district of Ladakh India. Regular antenatal visit and prenatal diagnosis are recommended for prevention. It is suggested that women in the reproductive age group need to be aware about regular antenatal and prenatal diagnosis and the use of supplement like folic acid in their preconception period for prevention of common anomalies should be considered.

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