

# Pattern of Congenital Anomalies in Newborns in a Tertiary Level Hospital in Bangladesh

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## ABSTRACT

- Objective** To find out frequency of various congenital malformations in neonates in a tertiary care hospital.
- Study design** Descriptive study.
- Place & Duration of study** Department of Neonatology, Mymensingh Medical College Hospital (MMCH), Mymensingh, Bangladesh from April 2011 to March 2012.
- Methodology** A total 6040 babies were studied in the neonatal period immediately after admission and all cases with congenital anomalies were enrolled. A detailed history for any risk factor was taken. A thorough physical examination was performed. Confirmation of internal defect was done by various imaging modalities; i.e., radiography, ultrasound, echocardiography and CT scan. A detailed history was taken regarding maternal age, gestational age, and previous history of delivery of abnormal baby.
- Results** A total of 106 neonates had one or more congenital anomalies accounting to a frequency of 1.75% malformation. The number of congenital anomalies were more in males (M:F=1.2:1) and in neonates of young and elderly mothers. The pattern of congenital anomalies related to head and neck, chest and gastrointestinal tract (20.75%), nervous system (19.81%), cardiovascular system (18.87%), musculoskeletal system (12.26%), genitourinary system (11.32%), chromosomal abnormalities (6.6%) and others (10.37%).
- Conclusions** Overall frequency of congenital anomalies remained low. Most frequent anomalies were related to nervous system and cardiovascular system.
- Key words** Congenital, Anomaly, Neonate.

## INTRODUCTION:

Congenital anomaly is an abnormal structural or medical condition that presents at birth.<sup>1</sup> A congenital anomaly may be narrowly defined in terms of physical structure as a malformation, an abnormality of physical structure or form usually found at birth or during the first few weeks of life; or defined more widely to include functional disturbance as a defect, any irreversible condition existing in a child before birth in which there is sufficient deviation in the usual

number, size, shape, location or inherent character of any part, organ, cell or cell constituent to warrant its designation as abnormal.<sup>2</sup> A congenital anomaly is thus any alteration present at birth of normal anatomic structure and has cosmetic, medical or surgical significance.

The birth of an infant with major malformations, whether diagnosed antenatally or not, evokes an emotional parental response.<sup>3</sup> The world wide incidence of congenital malformation is estimated at 3% to 7% but actual number varies widely between countries.<sup>4</sup> Congenital anomalies or birth defects are relatively common, affecting 3% to 5% of live births in the United States (US) and 2.1% in Europe.<sup>5,6</sup> Congenital anomalies account for 8% to 15% of perinatal deaths and 13% to 16% of neonatal deaths

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in India.<sup>7,8</sup> For more than two decades, congenital anomalies have been the leading cause of infant mortality in the United States.<sup>9</sup> In spite of the frequency of congenital anomalies the underlying causes for most remain obscure. Around 40%-60% of congenital anomalies are of unknown etiology.<sup>9,10</sup> The prevalence rate of congenital anomalies is increasing due to exposure of teratogens of various kinds.<sup>11</sup>

Available literature shows that congenital malformations contribute highly to prenatal mortality and postnatal physical defects.<sup>12,13</sup> It was also observed that better maternal care and improved standard of living have very little affect on the overall frequency of congenital malformations.<sup>14</sup>

No national survey regarding congenital anomalies in Bangladesh is available till date. But a large number of abnormal babies are admitted in Neonatal unit of MMCH (a tertiary referral hospital), Bangladesh each year. This study was intended to document overall frequency, pattern of congenital anomalies and also to find out the major associated maternal and fetal factors in newborns at birth in this region

#### METHODOLOGY:

This descriptive study was carried out in the Department of Neonatology in Mymensingh Medical College Hospital, Mymensingh, Bangladesh on all

the neonates admitted in NICU from April 2011 to March 2012. All cases with congenital anomalies were enrolled. A detailed history for any risk factor was taken. A thorough physical examination was performed. Confirmation of internal defect was done by various imaging modalities.

A detailed history was taken regarding maternal age, gestational age, and previous history of delivery of abnormal baby. Significant maternal illness like diabetes mellitus, hypertension, hypothyroidism, infection with TORCH and also exposure to radiation and smoking during antenatal period were recorded. The babies were followed up till discharge from the hospital or death.

#### RESULTS:

During this one year study period a total of 6040 newborns were admitted in neonatal ward. Of these 106 (1.75%) neonates had one or more congenital anomalies. Male to female ratio was 1.2:1. Commonest anomalies were related to head and neck, chest, gastrointestinal tract, and trunk (20.75%). Details are given in table I. Congenital anomalies were seen more in newborns of young mothers. Consanguinity of marriage was noted among four mothers. Maternal exposure to some drugs (e.g., antiepileptic, oral contraceptive, vitamin-A) were noted in 6 patients. Maternal illness (diabetes mellitus), smoking and previous history of malformed baby were also noted.

**Table I: Anomalies Related to System Involved**

System	Type of anomaly	No of Patients	Percentage of Grand Total
Alimentary Tract, Head & Neck, Trunk	Cleft lip/Cleft palate	06	5.66
	Anorectal malformations	04	3.77
	Omphalocele	03	2.83
	Diaphragmatic hernia	02	1.89
	Hirschsprung's disease	02	1.89
	Esophageal atresia with TEF	01	0.94
	Gastroschisis	01	0.94
	Omphalopagus	01	0.94
	Duodenal atresia	01	0.94
	Malrotation	01	0.94
Total		22	20.75
Nervous System	Meningocele/Meningomyelocele	08	7.55
	Hydrocephalus	07	6.60
	Encephalocele	02	1.89
	Microcephaly	02	1.89

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	Anencephaly	01	0.94
	Spina bifida	01	0.94
Total		21	19.81
Cardiovascular system	Ventricular septal defect	07	6.60
	Atrial septal defect	06	5.66
	Patent ductus arteriosus	04	3.77
	Tetralogy of Fallots	01	0.94
	Transposition of great arteries	01	0.94
	Multiple congenital heart disease	01	0.94
Total		20	18.87
Musculoskeletal System	Club foot	05	4.72
	Polydactyly	04	3.77
	Syndactyly	03	2.83
	Amelia	01	0.94
Total		13	12.26
Genitourinary System	Hypospadias	03	2.83
	Prune belly syndrome	02	1.89
	Ambiguous genitalia	02	1.89
	Hydronephrosis	01	0.94
	Epispadias	01	0.94
	Posterior urethral valves	01	0.94
	Exstrophy bladder	01	0.94
	Congenital nephrotic syndrome	01	0.94
Total		12	11.32
Chromosomal Abnormalities	Down's syndrome	05	4.72
	Turner syndrome	01	0.94
	Turner syndrome with ambiguous genitalia	01	0.94
Total		07	6.60
Others	Aplasia cutis congenita	02	1.89
	Ectodermal ichthyosis	01	0.94
	Congenital band and limb hypertrophy	01	0.94
	Osteogenesis imperfecta	01	0.94
	Cholodian baby	01	0.94
	Pierre Robin syndrome	01	0.94
	Multiple congenital anomalies	04	3.77
Total		11	10.37
Grand Total		106	100

**DISCUSSION:**

This study was an attempt to report hospital based data of congenital malformations in neonates. Our findings were similar to that of Singh et al from India who reported a frequency of 1.5% and Golalipour et al from Iran (1.01%).<sup>15,16</sup> Desai et al from Bombay, India, Fatema et al from Bangladesh found a little higher incidence of 3.61% and 3.68% respectively.<sup>17,18</sup> Frequency of congenital malformation were slightly higher in males in our series. Congenital anomalies were seen more in young and older mothers. Similar findings were observed by others.<sup>15,19</sup>

One of the commonly involved system in the index study was cardiovascular system (18.87%). Asendi et al from India and Ekwere et al from Nigeria found alimentary system, nervous system and cardiovascular system as the most commonly affected parts in descending order of frequency in their series.<sup>20,21</sup> One study from India and another from Iran found musculoskeletal anomalies as highest in order (30.60% and 30.10% respectively).<sup>15,16</sup> Fatema et al from Bangladesh and Tomatir et al from Turkey found that central nervous system abnormality were the highest in position in their studies (46.67%, 31% respectively).<sup>18,22</sup>

Frequency of congenital heart anomalies was high in our study. Among this group VSD was the most common. In chromosomal anomalies Down's syndrome was most frequently seen. Consanguinity of marriage, maternal exposure to some drugs, maternal disease, maternal smoking habit have some relation with congenital malformations. Ananda et al observed a significant correlation between first trimester fever and positive family history and congenital malformations.<sup>23</sup>

**CONCLUSIONS:**

All neonates should be examined thoroughly for overt and occult congenital anomalies. Overall frequency of congenital anomalies in this study was low.

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