Original Article

Prevalence and Pattern of Congenital Anomalies in Newborn Babies in a Tertiary Care Hospital

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ABSTRACT

Introduction: As the other causes of infant mortality like infection and nutritional deficiencies are being brought in control, congenital anomalies have rapidly emerged as one of the major worldwide problems. They also have an effect on health care expenditure as well. The poors data recording on congenital malformations make it difficult to ascertain the burden in order to formulate policies so this study am to find out the prevalence and pattern of congenital anomalies **Materials and Method:** A prospective cross-sectional study was carried out in a tertiary care hospital in the western region of Nepal from April 2018 to Nov. 2018 after approval from the institutional review committee. Sample size was calculated and consecutive sampling was done to reach the sample size. Data were collected after taking consent from the parents and entered in a SPSS, point estimate at 95% CI was calculated along with frequency and proportion for binary data. **Results:** Out of 1282 babies the number of babies having one or more congenital birth defects were 76 (5.9%). Malformation of the musculoskeletal system was noted in 20 (26.32%) while genitourinary defects in 13 (17.11%). Prevalence of congenital birth defects is 76 (5.9 %) at 95% CI (2. 3-7.5%). Mean weight of the babies were 2. 63±0.67 kg while the mean gestational age was 37.07±3.28 days. Family history of congenital birth defect was present in 8 (10. 5%) cases. Musculoskeletal system birth defects accounted for 20 (26.32%) cases followed by Ear, Nose & Throat (19.73%), Genitourinary (17.11%), CNS (11.84%), CVS (9.21%), Syndromes (5.26%), Skin (3.95%), Gastrointestinal (3.95%) and Endocrine (2.63%) respectively. **Conclusion:** Public awareness about preventable risk factors is to be created and early prenatal diagnosis and management of common anomalies is strongly recommended.

Keywords: Congenital birth defects, Prevalence, Risk factors

INTRODUCTION

Congenital anomalies are either structural or functional abnormalities which are present at birth and can be a part of syndrome or an isolated anomaly. [1] They are a leading cause of perinatal mortality; childhood morbidity and disability in many countries accounting for causes of neonatal/infant mortality rate worldwide. [2] Globally, they contribute up to 11% of neonatal deaths. [3] Studies done in India have a prevalence rate of 6-7%. [4] Studies conducted at tertiary hospitals in Nepal showed a prevalence rate of 0.36% to 0.42%. [5] The impact of presence of anomalies on parents and the babies itself pose ethical issues which occur mostly due to the children being dependent on their parents for care and related decision making. The poor data recording on congenital malformations makes it difficult to ascertain the burden in order to formulate policies. We conducted this study to find out the overall prevalence and pattern of congenital birth defect of the neonates.

MATERIALS AND METHOD

This hospital based descriptive cross-sectional study was conducted from April 2018 to Nov. 2018 at Devdaha Medical College, Rupandehi, Nepal after taking ethical approval from the institutional review committee (IRC) of the college. The present study included all the admitted neonates in the neonatal intensive care unit (NICU) and special care baby unit (SCBU) fulfilling the inclusion and exclusion criteria. We included the neonates born either through lower section caesarean section (LSCS) or vaginal delivery. Variables were predesigned according to WHO Performa where gender, weight, gestational age, mode of delivery, consanguinity, maternal and paternal age, antenatal visit record and family history were recorded after taking the consent from the concerned parents. Diagnosis of congenital

anomalies was made on the basis of clinical examination and investigations. Appropriate investigations like X- ray imaging of the chest and abdomen, cranial and abdominal ultrasound, echocardiography and hematological and biochemical tests were done wherever applicable. Newborn metabolic assessment could not be performed due to lack of facility for these investigations in our hospital. The risk factors associated with malformations was also documented. Multiorgan system involvement according to Christensen et al. [6] was also noted. Selection bias and information bias has been minimized as possible. Data were documented in the designed proforma and entered in a SPSS, point estimate at 95% CI was calculated along with frequency and proportion for binary data.

RESULTS

During the study period, a total number of 1282 babies were delivered. The number of babies having one or more congenital birth defects were 76 (5.9%). Table 1 shows the demographic profile of the babies born with malformation. Different kinds of birth defects were detected. Malformation of the musculoskeletal system was noted in 20 (26.32%) while genitourinary defects in 13 (17.11%). The number of cases with defects in the various organs of the body is shown in Table 2. Prevalence of congenital birth defects is 76 (5.9 %) at 95% CI (2.3-7.5%).

Table 1. Showing the study parameters of babies born with congenital birth defects(n=76)

Parameters	n (%)
Gender	
Male	48 (63.2%)
Female	28 (36.8%)
Gestational age	
Preterm (<37 weeks)	23 (30.26%)
Term (37-42 weeks)	50 (65.58%)
Post term (>42 weeks)	03 (3.95%)
Weight	
<2.50 kg	22 (28.94%)
2.5-3.49 kg	44 (57.89%)
>3.5 kg	10 (13.16%)
Mode of delivery	
NVD	56 (73.68%)
LSCS	20 (26.32%)
Gravida	
Primi	26 (34.21%)
Multi	50 (65.79%)
Parental consanguinity	
Present	10 (10.5%)
Absent	66 (89.5%)
Family history of birth defect	
Present	06 (2.4%)
Absent	70 (28.6%)
Maternal age	
<20 yrs	06 (7.9%)
20-<25 yrs	31 (40.79%)
25-30 yrs	27 (35.52%)
>30 yrs	12 (15.79%)

Mean weight of the babies were 2. 63±0.67 kg while the mean gestational age was 37. 07±3.28 days. The mean maternal age was 25.55±4.45 years. Family history of congenital birth defect was present in 8 (10.5%) cases. Musculoskeletal system birth defects accounted for 20 (26.32%) cases followed by Ear, Nose & Face (19. 73%), Genitourinary (17.11%), CNS (11.84%), CVS (9.21%), Syndromes (5.26%), Skin (3.95%), Gastrointestinal (3.95%) and Endocrine (2.63%) respectively. Distribution of congenital birth defects is shown (Table 2).

Table 2. Showing the distribution of congenital birth defects.

System	Birth defect	n (%)
Central nervous system (CNS) = 09 (11. 84%)		
	Encephalocele	01 (1.3%)
	Congenital hydrocephalus	02 (2.6%)
	Meningomyelocele	01 (1.3%)
	Anencephaly	01 (1.3%)
	Microcephaly	04 (5.3%)

Musculoskeletal = 20 (26.32%)		
	Congenital talus equine varus (CTEV)	0 9 (11.84%)
	CTEV with knee dislocation	01(1.3%)
	Polydactyly	05 (6.6%)
	Syndactyl	03 (3.9%)
	Amputed fingers	01(1.3%)
	CTEV with CDH	01(1.3%)
Genitourinary = 13 (17. 11%)		
	Hydrocele	04 (5.3%)
	Undescended testes	04 (5.3%)
	Inguinal hernia	02 (2.6%)
	Umbilical hernia	01 (1.3%)
	Both umbilical and inguinal hernia	01 (1.3%)
	Epispadias	01 (1.3%)
Ear, Nose, Face, Neck = 15 (19.73%)		
	Cleft lip	04 (5.3%)
	Cleft palate	03 (3. 9%)
	Cleft lip with cleft palate	05 (6. 6%)
	Absent pinna	01 (1. 3%)
	Choanal atresia	02 (2.6%)
Gastrointestinal =03 (3.95%)		
	Imperforate anus	01 (1.3%)
	Ileal atresia	02 (2.6%)
Cardiovascular System (CVS) = 07 (9.21%)		
	Rubella syndrome	01 (1.3%)
	PDA with TORCH	01 (1.3%)
	Hypoplastic left heart syndrome	01 (1.3%)
	Ventricular Septal (VSD)	02 (2.6%)
	Cyanotic heart disease	02(2.6%)
Skin = 03 (3. 95%)		
	Preauricular skin tags	03 (3.9%)
Endocrine System = 02 (2.63%)		
	Congenital hypothyroidism	01(1.3%)
	Ambiguous genitalia	01(1.3%)
Syndromes =04 (5.26%)		
	Down syndrome	03 (3.9%)
	Edward syndrome	01 (1.3%)

DISCUSSION

During the study period, 1282 babies were delivered. Out of which 76 (5.9%) were born with congenital birth defect (CBD). The prevalence of CBD was found out to be 5.9% in our study. This is quite similar to a study done in Nepal by Bhandari et al. [7] which showed a prevalence of 5.2% and by Ajao et al. [8] (6.3%). One of the studies done in Nepal showed a prevalence rate of 8.39%[7], while it is significantly higher than previous studies done by Dangol et al. (1.1%)[1], maternity hospital (0. 36%) [5] and in Western Regional Hospital (0.42%). [2] Our prevalence rate is similar to our neighbouring region like that of India (7.5%) but was comparatively low as compared to 13% reported in Pakistan[9]and it was high that of hospital based study (4.23%) of other countries like Nigeria that has 2.7%, in Taiwan 4.3%, Oman 2. 46% and of Bahrain 2.7% respectively. [10-13]

The most common birth defect in our study was found to be that of musculoskeletal system. This is similar to studies from Nepal Malla et al. [5], Taiwan Chen et al. [11], India Sarkar et al. [12], Iran Mosayebi et al. [13, 14] which showed musculoskeletal anomalies as the commonest form of birth defects. In contrast to our study, other studies done in developing countries like India[15] and Pakistan [16] documented the highest frequency of CNS anomalies and lowest frequency of congenital heart disease. This variation in the frequencies could be due to the genetic Introduction, geographical area, socioeconomic and nutritional status.

Male babies (63.2%) were significantly affected with congenital anomalies than females (38.8%) in the present study.

Our study had a higher incidence of term babies (65.58%) being affected with CBD than preterm babies (30. 26%). This is similar to a study done by Vils V et al [17] which showed 72.18% term babies and 27.8% babies affected respectively. While it is in contrast to studies done by Prajapati and Aman Taskade which

showed a significantly higher incidence of anomalies in preterm babies than term babies. [18]

CONCLUSIONS

The prevalence rate obtained in this study, however, may not reflect the true situation in the general population but gives a clue to the existence of the problem and could serve as a stimulus for further studies on the subject.

CONFLICT OF INTEREST: None.

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