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Research Article

PREVALENCE AND PATTERN OF STRUCTURAL CONGENITAL ANOMALIES AMONG NEONATES DELIVERED AT TERTIARY CARE HOSPITAL

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Abstract:

Objective: To determine the prevalence and pattern of structural congenital anomalies among neonates delivered at tertiary care hospital.

Material and methods: This retrospective observational was conducted at Department of neonatology, Civil Hospital, Bahawalpur and Bahawal Victoria Hospital, Bahawalpur from January 2018 to December 2018 over the period of 1 years. Total 10566 deliveries were performed during study period and 138 neonates were found with congenital anomalies. Pattern of congenital anomalies was analyzed in selected neonates.

Results: The number of case records analyzed was 10566, out of which 138 neonates were reported to have structural congenital anomalies; the prevalence was 1.3%. Mean age of the mothers of neonates was 23.66 ± 2.63 years. Male neonates were 74 (54%) and female neonates were 64 (46%). Congenital heart disease formed a major portion of congenital anomalies identified constituting 61 (44.20%). The most common extra cardiac congenital anomalies noted was cleft lip/cleft palate 15 (10.87%) followed by single umbilical artery which was noted in 8 (5.8%) and Imperforate anus in 7 (5.07%).

Conclusion: Results of present study showed higher number of neonates with congenital anomalies. Most of the mothers belonged to 3rd decade. Higher number of mother were multiparas. Most of the neonates with congenital anomalies were male. Most common birth defect was congenital heart disease.

Key words: Congenital anomalies, heart disease, neural tube defects

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INTRODUCTION:

Congenital anomalies, also known as birth defects can be defined as structural or functional anomalies, including metabolic disorders, which are present at the time of birth. The term congenital malformation is restricted to structural defects at birth.¹ Ultrasound examination is beneficial in the early detection of congenital malformations; in low risk populations the sensitivity is low, varying from 17% to 35%, and the specificity is 99%, whereas in high-risk populations the sensitivity is greater than 90%.² Early antenatal diagnosis of major congenital anomalies is important for the appropriate counselling of parents, possible termination of pregnancy, fetal or neonatal intervention, delivery in the appropriate center and future prevention.³ Micro-nutrient deficiencies, chromosomal disorders, multifactorial inheritance, environmental teratogens and single gene defects are the major causes of congenital anomalies.⁴

Presence of birth defects is a global problem, but their impact is particularly severe in middle- and low-income countries where mortality due to serious birth defects approaches 95%.⁵

Birth defects affect approximately 1 in 33 infants and result in 3.2 million birth defect related disabilities every year.⁶ Approximately 4-5% of newborns have major birth defects and may require genetic analysis.⁷ Besides, birth defects may result in long-term disability, which may have significant impacts on individuals, families, healthcare systems and societies. Worldwide about 7.9 million children (6%) annually are born with a serious birth defect.⁸

Congenital anomalies is a problem prevailing since centuries and is very well recognized. It is an issue for research because of the high prevalence and the devastating consequences they can have on the neonate and whole family. We have carried out this study to determine the prevalence of different congenital anomalies in our local set up. Results of this study may help us in early management.

MATERIAL AND METHODS:

This retrospective observational was conducted at Department of neonatology, Civil Hospital, Bahawalpur and Bahawal Victoria Hospital, Bahawalpur from January 2018 to December 2018 over the period of 1 years. After obtaining the approval of the institutional ethics committee, the case sheets of all neonates born during the study period

were recruited for this study. Neonates suspected to have metabolic disorders were excluded from the study.

The identification of congenital anomalies at birth in the study area is done by clinical examination of the neonates and supportive investigations like imaging studies. Data on the type of anomaly, maternal age, parity, history of abortions in the mother and details of the neonate such as birth weight, gestational age etc were gathered. The final outcome of these babies was also noted.

All the collected data was entered in SPSS version 20 and analyzed. Mean and SD was calculated for numerical data. Frequencies and percentages were calculated for categorical data.

RESULTS:

The number of case records analyzed was 10566, out of which 138 neonates were reported to have structural congenital anomalies; the prevalence was 1.3%. Mean age of the mothers of neonates was 23.66 ± 2.63 years. Total 12 (8.70%) mothers were belonged to age group ≤ 20 years followed by 111 (80.43%) mothers belonged to age group 21-30 years and 15 (10.87%) mothers belonged to age group ≥ 30 . (Table 1) The mean birth weight of the neonates with congenital anomalies was 2.38 ± 0.618 kg. The lowest weight was 758 grams and the maximum weight noted was 4.17 kg. Caesarean sections were performed in 66 (47.83%) mothers, vaginal deliveries were 72 (52.17%). Term babies were 88 (63.77%) and preterm babies were 50 (36.23%). Total 15 (10.87%) neonates were expired and 9 (6.52%) were referred for surgical management. Primigravidae were 45 (33%) and multigravidae were 93 (67%). (Fig. 1). Male neonates were 74 (54%) and female neonates were 64 (46%). (Fig. 2)

Congenital heart disease formed a major portion of congenital anomalies identified constituting 61 (44.20%). The most common extra cardiac congenital anomalies noted was cleft lip/cleft palate 15 (10.87%) followed by single umbilical artery which was noted in 8 (5.8%) and Imperforate anus in 7 (5.07%). Urogenital anomalies constituted 6 (4.35%), Congenital Talipes Equinus Varus 6 (4.35%) limb anomalies in 6 (4.35%) neonates. Down syndrome in 5 (3.8%), neural tube defects were found in 4 (3.62%), polydactyly 3 (2.17%), preauricular skin tag/ear anomalies in 3 (2.17%), congenital diaphragmatic hernia in 2 (1.45%) and hydrocephalus in 3 (2.17%) neonates. (Table 1)

Table 1: Age distribution of mothers of neonates

Age group	N	%
≤20	12	8.70
21-30	111	80.43
≥30	15	10.87
Total	138	100

Fig. 1: Parity of mothers

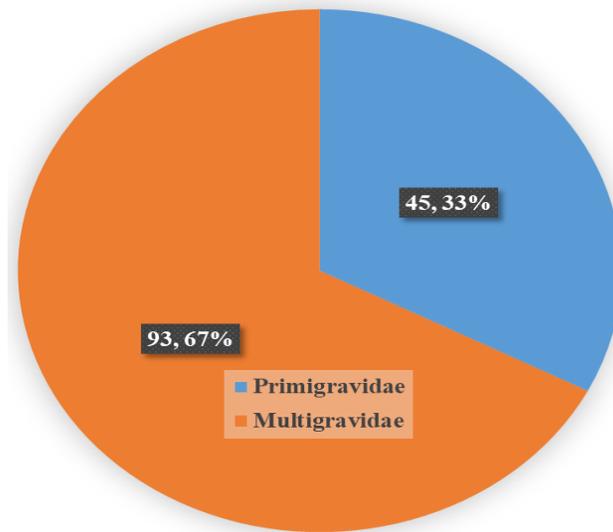


Fig. 2: Gender distribution of neonates

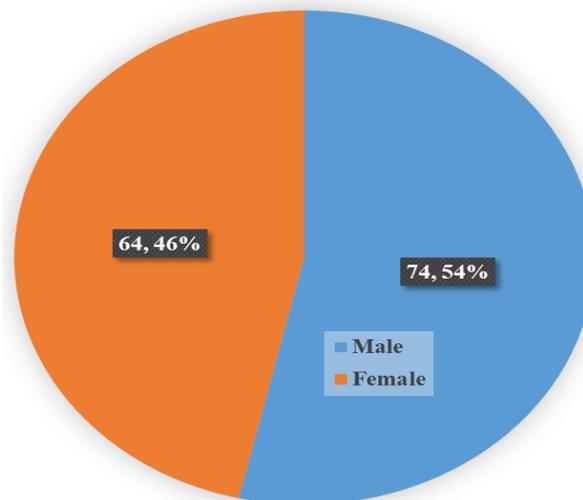


Table 2: Frequency of congenital anomalies (N=138).

Congenital anomaly	Frequency	%
Congenital heart disease	61	44.20
Cleft lip/ cleft palate	15	10.87
Single umbilical artery	8	5.8
Imperforate anus	7	5.07
Urogenital anomalies	6	4.35
Congenital talipes equinus varus	6	4.35
Limb anomalies	6	4.35
Down syndrome	5	3.8
Neural tube defects	4	3.62
Polydactyly	3	2.17
Preauricular skin tag/ear anomalies	3	2.17
Other syndromes	3	2.17
Congenital diaphragmatic hernia	2	1.45
Hydrocephalus	3	2.17
Trachea-esophageal fistula	2	1.45
Intestinal obstruction	1	0.72
Skeletal dysplasia	1	0.72
Developmental dysplasia of hip	1	0.72
Ocular albinism	1	0.72
Total	138	100

DISCUSSION:

The pattern and prevalence of congenital anomalies may vary over time or with geographical location, reflecting a complex interaction of known and unknown genetic and environmental factors including socio-cultural, racial and ethnic variables.⁹ With improved control of infections and nutritional deficiency diseases, congenital malformations have become important causes of perinatal mortality in developing countries.

In present study, congenital anomalies was found in 1.3% neonates (13.0/1000 total births) during study period. This corresponds to a study by Parveen F et al at Liyari General hospital where this rate was found to be 11.4/1000 total births.¹¹ Madi et al showed an incidence of 1.25% in their study at Kuwait.¹² Likewise, 1.9% was rate reported by an author in Iran and 1.4% was reported in a study at Lady Reading Hospital, Peshawar.¹³⁻¹⁴

In a study by Qadir et al, prevalence of congenital anomalies was 1.23% which is comparable with our findings.¹⁵

In present study, congenital heart disease was found in 61 (44.20%) cases and acyanotic heart diseases constituted 86.3% of the diagnosed cases. A total of 10 cases of cyanotic heart disease were diagnosed (13.6%). Among those with congenital heart disease, single heart lesion was found in 72.6% and remaining 36.98% had multiple heart diseases.

In one study by Abqari S et al, acyanotic heart disease constituted 72.50% of congenital heart disease and in one by Shah et al in Kathmandu, it was 69%.¹⁶⁻¹⁷ Acyanotic heart disease constituted 27.50% of the congenital heart disease according to Abquari et al.¹⁶ In the present study the prevalence was found to be 13.69%. A study by Shah GS estimated the prevalence of cyanotic congenital heart disease to be 31%.¹⁷

The most common extra cardiac congenital anomalies noted was cleft lip/cleft palate 15 (10.87%) followed by single umbilical artery which was noted in 8 (5.8%) and Imperforate anus in 7 (5.07%). Urogenital anomalies constituted 6 (4.35%), Congenital Talipes Equinus Varus 6 (4.35%) limb anomalies in 6 (4.35%) neonates. Down syndrome in 5 (3.8%), neural tube defects were found in 4 (3.62%), polydactyly 3 (2.17%), preauricular skin tag/ear anomalies in 3 (2.17%), congenital diaphragmatic hernia in 2 (1.45%) and hydrocephalus in 3 (2.17%) neonates.

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In one study by Pavri S et al, prevalence of cleft lip and palate was found to be 11% to 15.3% neonates.¹⁸ Neural tube defects identified by Omer IM et al in Sudan was 2.8/1000 live births, and that identified by Seidahmed MZ et al in Riyadh was 1.2/1000 live births.¹⁹⁻²⁰ In a study by Burgos CM et al, congenital diaphragmatic hernia was found to be 3.5 neonates, and in a study done by Grizelj R et al in Croatia it was found to be 2.67% live births.^{16,21}

CONCLUSION:

Results of present study showed higher number of neonates with congenital anomalies. Most of the mothers belonged to 3rd decade. Higher number of mother were multiparas. Most of the neonates with congenital anomalies were male. Most common birth defect was congenital heart disease.

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