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Research Article

A study of incidence of congenital anomalies in newborn: a hospital based study

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ABSTRACT

Background: Congenital anomalies have emerged as a main cause of perinatal mortality as well as infant morbidity and mortality. The aim of this study is to determine the incidence of congenital anomalies and to study associated factors.
Methods: It is an observational study conducted in the Department of Obstetrics and Gynecology of SMGS Hospital during a period of one year from October, 2012 to September, 2013. All women with anomalies proven on Ultrasonography and those having no antenatal record but after delivery/abortion, examination of newborns revealed anomalies; were included in the study.
Results: The pattern of congenital anomalies included Central nervous system (49.60%), Urinary system (13.79%), musculoskeletal system (12.99%), GIT (7.16%), CVS (5.83%) etc. The overall incidence of congenital anomalies was 1.85%. Higher incidence of anomalies was found in babies of mother between 26-30 years of age (2.13%) and parity of 4 and above (3.65%). Frequency was more common in Muslims as compared to Hindus (2.8% vs 1.68%), in non-cephalic presentation as compared to cephalic presentation (10.28% versus 1.51%).
Conclusion: This study stresses upon incidence of congenital anomalies as they are an important cause of perinatal mortality. To decrease the incidence of various congenital anomalies and their prevalence in the particular region, it is important that the distribution and prevalence are identified in that region and country as a whole.

Keywords: Congenital, Anomaly, Malformation, Newborn

INTRODUCTION

Congenital anomalies is an abnormality of structure, function or body metabolism that is present at birth (even if not diagnosed until later in life) and results in physical or mental disability or is fatal.[1] Congenital anomalies include minor physical defects such as birth marks to severe defects like congenital heart defects and combinations of other abnormalities affecting several parts of the body. Congenital anomalies may be inherited or sporadic, isolated or multiple, gross or microscopic.[2,3] In the early part of 19th century, the percentage of deaths from congenital anomalies was relatively low. This was because preventive medicine, immunology and antibiotics were not in usage. Now the number of deaths from infections, metabolic and endocrinal disorders has decreased and so birth defects as a cause of perinatal mortality have come to the forefront.[4] Congenital anomalies account for 8-15% of perinatal deaths and 13-16% of neonatal deaths in India.[5,6]. The case fatality rate for the most severe anomalies such as anencephaly, trisomy 13, trisomy 18 and severe heart defects are virtually 100% by the child's first birthday.[7] In spite of frequency of congenital anomalies, the underlying cause for most remains obscure. Congenital anomalies are now etiologically considered as the outcome of intricate

interaction between host and environment. This indicates the importance and urgency of epidemiological investigations in this particular field.

METHODS

This study was undertaken in the Department of Obstetrics and Gynecology, SMGS Hospital, Government Medical College, Jammu from October, 2012 to September, 2013. It is an observational cross sectional type of study. All babies born in the department during study period having congenital anomaly on examination or proven by any investigation were included.

Maternal variables like age, religion, address, menstrual history, obstetric history, medical history, drug intake, exposure to X-rays in pregnancy, history of congenital anomalies in other off springs, consanguinity were recorded. After delivery, a meticulous examination of baby and placenta was done. Neonatal characteristics including live birth or still birth, gestational age at the time of delivery, Apgar score, sex, presence of congenital anomaly, its type and subtype were recorded.

Finally, congenital anomalies were classified according to ICD-10.[8,9] Observations were tabulated and analyzed as percentages deemed appropriate for qualitative variables.

RESULTS

A total of 15447 newborns were delivered to 15143 mothers, among whom 8167 were males, 7274 were females and 9 were with ambiguous genitalia. There were 14850 singleton births, 282 twin births and 11 triplet births.

Out of 15447 newborns, 285 were having congenital anomalies, accounting to an incidence of 1.85%. Out of these, 207 (72.63%) were having single anomaly and 78 (27.37%) had multiple malformations. There were total of 377 anomalies amongst 285 newborns. In our study, malformations were more common in twins than in singletons (2.84%).

The pattern of congenital anomalies is shown in table 1.

Table 1: Pattern of congenital anomalies.

System Involved	Number of Anomalies	Incidence (%) (95%CI)	Percentage (%) (n= 377)
Central Nervous System	187	1.21 (1.03-1.39)	49.60
Urinary System	52	0.34 (.24-44)	13.79
Musculoskeletal System	49	0.32 (.22-.42)	12.99
Gastrointestinal System	27	0.1 7 (.11-.23)	7.16
Cardiovascular System	22	0.14 (.08-.20)	5.83
Genital System	13	0.084 (.04-.12)	3.45
Cleft Lip/ Cleft palate	8	0.05 (.01-.09)	2.12
Respiratory System	4	0.03 (.01-.05)	1.06
Eye, ear, face and neck deformity	3	0.02 (.00-.04)	0.79
Skin	4	0.03 (.01-.05)	1.06
Other anomalies: not elsewhere classified	6	0.04 (.00-.08)	1.59
Chromosomal	2	0.02 (.00-.04)	0.53
Total	**377**	**1.85**	**100**

Figure 1: Encephalocele.

Figure 2: Omphalocele.

Figure 3: Facial dysmorphism

Central nervous system was the most predominant system involved accounting for an incidence of 1.21% followed by urinary system (0.34%) and musculoskeletal system (0.32%). Incidence of gastrointestinal system, cardiovascular system and genital system was 0.17%, 0.14% and 0.084% respectively. Central nervous system constituted 49.60% of total anomalies.

There was higher number of anomalies in newborns of mothers between 26-30 years of age (2.13%) followed by <20 years of age (2.1%). Significant high frequency of anomalies was found in mothers having party of four and above accounting to an incidence of 3.65% as compared to Para one mothers.

There was higher proportion of anomalies in fetuses with non-cephalic presentation (10.28%) as compared to those with cephalic presentation (1.51%). Higher incidence of anomalies was observed in Muslims (2.8%) as compared to Hindus (1.68%).1.92% of newborns in urban and 1.83% in rural group had anomalies. Consanguinity was present in 20 parents. Amniotic fluid abnormalities were present in 23 mothers.

120 mothers did not take folic acid during first trimester of pregnancy. There was history of congenital anomalies in previous babies of two mothers; anencephaly in one and ventricular septal defect in the other. There was no history of any drug intake or radiation exposure.

DISCUSSION

In the present study, the overall incidence of congenital anomalies was 1.85% which was comparable to other studies.[10-12]

However, there are variations between different studies which could be explained by the effect of different racial, ethnic and social factors in various parts of the world; or different geographical factors prevailing in our region. In our study, malformations were more common in twins than in singletons (2.84% versus 1.85%). 11 newborns of 8 pairs of twins were malformed. Shawky RM et al observed that all major and minor malformations were more common in twins than in singletons.[9]

Out of 285 congenitally malformed babies, 72.63% had single anomaly whereas 27.27% had multiple anomalies. This is in consonance with study by El koumi MA et al With regard to pattern of congenital anomalies in present study, the most common system involved was Central nervous system (49.60%), followed by urinary system (13.79%), Musculoskeletal system (12.99%), Gastrointestinal system (7.16%), Cardiovascular system (5.83%), Genital system (3.45%).[10]

These results are comparable to studies conducted by other workers.[13-15] In contrast to this, El koumi MA et al reported musculoskeletal system to be the commonest system involved.[10]

It was observed that congenital anomalies were more common in babies born to young mothers <20 yrs (2.1%) and between 26 to 30 years (2.13%) of age. The results are comparable to study by Sirkal S et al Congenital anomalies were seen more frequently in mothers who had parity of four and above (3.65%) which was comparable to other studies by Shawky RM et al and Taksande A et al.[9,11,12]

In the current study, relationship of congenital anomalies with religion was also observed and it was found that there was higher prevalence of anomalies among Muslims (2.8%) as compared to Hindus (1.8%) which was comparable with study by Aggarwal SS et al.[5] Higher incidence of anomalies was present among fetuses with non-cephalic presentation (10.28%) as compared to cephalic presentation (1.51%). Similar results were shown by Shawky RM et al.[9] No significant relation of congenital anomalies with residence was observed in present study.

The present study helps to know the pattern of congenital anomalies in our region and also co-relation of anomalies with various maternal as well as fetal factors. Most of our observations are comparable with similar studies undertaken in other parts of country and world. However we differ in some observations made by other authors not only due to different genetic background, but also due to geographic, nutritional and socioeconomic differences.

CONCLUSION

Congenital anomalies are emerging as an important perinatal problem contributing to still birth and infant mortality. They also lead to emotional upset and social stigma to parents, which is beyond the limit of our imagination.

To decrease the incidence of various congenital anomalies and their prevalence in the particular region, it is important that the distribution and prevalence of congenital anomalies are identified in that region and country as whole. It is through these studies, more efficient measures will be developed to prevent the severe, costly, often deadly defects.

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