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Original Article

Evaluation of Various Congenital Anomalies among the Children of North India

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ABSTRACT:

Introduction: Congenital anomalies can be defined as structural or functional anomalies (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth or later in life. Congenital anomalies are an important cause of neonatal mortality both in developed and developing countries. **Aim**: The aim of the present to study was to evaluate the percentage of various congenital anomalies among the children of North India. **Material and methods:** It is a retrospective record based study. The study population comprised 2825 patients admitted with congenital anomalies. All the cases attending the department and diagnosed as having congenital anomalies during the study period were included in the study. This being a record based study, the records of the patients from 2003 till 2013 were analysed and recorded. **Results**: It was seen that the gastrointestinal system (GIT) congenital anomalies were found to be maximum (55.29%) followed by Genitourinary Tract (GUT) (29.02%), central nervous system (CNS) (11.96%) and other anomalies (3.71%). When both male and female distribution was done, it was observed that GIT anomalies were found more common in males (63.8%) than females(36.2%) and this difference was found statistically significant ($P < 0.001$). **Conclusion:** With increasing awareness, other causes of infant mortality like infections and nutritional deficiencies are being brought under control, but the prevalence rate of congenital anomalies is increasing due to exposure of teratogens. Therefore need of the hour is that strong preventive measures should be taken for these congenital anomalies.

Key words: Congenital anomalies, teratogens.

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INTRODUCTION:

According to WHO Congenital anomalies can be defined as structural or functional anomalies (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth or later in life. These are important causes of childhood death, chronic illness, and disability in many countries. The factsheet on 2000–2013 child causes of death, every year, around 276,000 babies die within 4 weeks of birth, worldwide, from congenital anomalies[1]. Birth defects are present in about 3% of newborns in USA.[2] The type with the greatest numbers of deaths are congenital heart disease(323,000), followed by neural tube defects (69,000).[3]

Congenital anomalies are an important cause of neonatal mortality both in developed and developing countries. It accounts for 8-15% of perinatal deaths and 13-16% of neonatal deaths in India.[4] It is not only a leading cause of fetal loss, but also contributes significantly to preterm birth, childhood and adult morbidity along with considerable repercussion on the mothers and their families.

Birth defects may be the result of genetic or environmental factors which include errors of morphogenesis, infection, epigenetic modifications on a parental germline, or a chromosomal abnormality. The outcome of the disorder will depend on complex interactions between the prenatal deficit and the postnatal environment.[2]

Various researches suggests that paternal food deprivation, germ line mutations, alcohol use, chemical mutagens, age, smoking habits and epigenetic alterations can affect birth outcomes.[6] As other causes of infant mortality like infections and nutritional deficiencies are being brought under control, the prevalence rate of congenital anomalies is increasing due to exposure of teratogens of various kinds.[7] Patients with multiple congenital anomalies present are relatively a difficult challenge to the paediatrician.

Thus the aim of the present to study was to evaluate the percentage of various congenital anomalies among the children of North India.

MATERIAL AND METHODS:

This was a retrospective record based study in the Paediatric Department of North India with a reasonably good inflow of the patients. The records of the patients from 2003 till 2013 were analysed. The study population comprised 2825 patients admitted with congenital anomalies during this tenure. Relevant information regarding age, sex, birth weight, birth order, socio-demographic data, and consanguinity and Significant antenatal history was recorded from the patient record registers. Although it was a record based study, but the records were well maintained such that there was no problem in recording the information. All the data were entered in the excel spread sheet. The data were tabulated and analysed in percentages and proportions. Categorical data were analysed by Chi-square test.

RESULTS:

During the study period of over a decade, 2825 patients data was recorded which were admitted with us with congenital anomalies. Various congenital anomalies were classified according to the system affected and the number of cases in each group were recorded (Table 1)

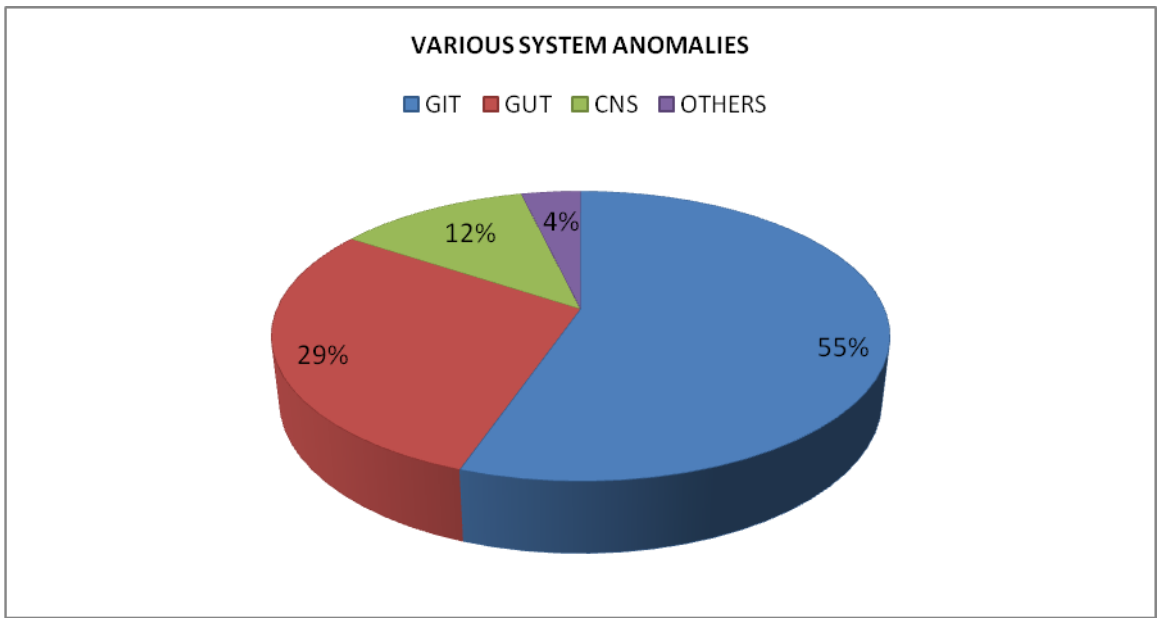
Frequency of distribution of cases were recorded as percentages (GRAPH 1) and it was seen that the gastrointestinal system (GIT) congenital anomalies were found to be maximum (55.29%) which included anorectal malformation, trachea-oesophageal fistula, malrotation of gut, duplication cyst and hypertrophic pyloric stenosis, followed by Genitourinary Tract (GUT) (29.02%), which comprised of Abdominal wall defects, pelvic ureteral junction obstruction, Inguinal, lumbar, and umbilical hernia and multicystic kidneys, central nervous system (CNS) (11.96%) which included Meningomyelocele and other anomalies (3.71%). When both male and female distribution was done, it was observed that GIT anomalies were found more common in males (63.8%) than females(36.2%) and this difference was found statistically significant ($P < 0.001$). (GRAPH 2)

TABLE 1: Distribution of cases in each group of congenital anomalies.

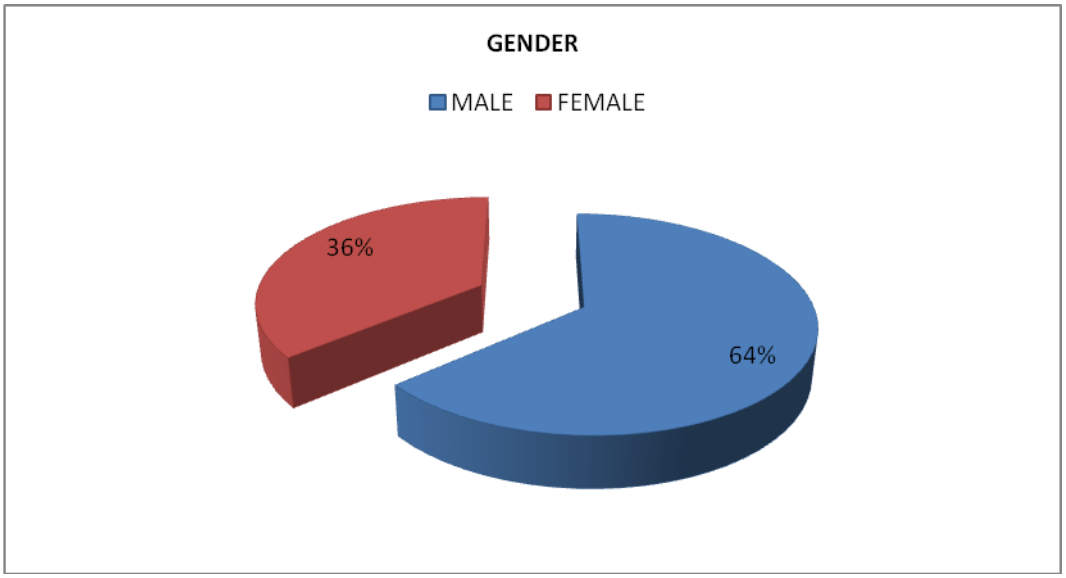
S.NO	ANOMALY OF VARIOUS SYSTEMS	TOATL CASES OF ANOMALIES	PERCENTAGE OF ANOMALIES
1.	GIT	1562	55.29%
2.	GUT	820	29.02%
3.	CNS	338	11.96%
4.	OTHERS	105	3.71%

Gastrointestinal Tract (GIT), Genitourinary Tract (GUT), central nervous system (CNS)

GRAPH 1: Frequency distribution of various system anomalies



GRAPH 2: Gender distribution in various recorded anomalies



DISCUSSION:

Since the ages, congenital anomalies have been topic of frequent discussion and research. Congenital malformations are rapidly emerging as one of the major worldwide problems as they can result in long-term disability. With the rapidly emerging number of patients with such congenital anomalies, it has relatively become a difficult challenge to the paediatrician.

This study was an effort to see the frequency distribution of these congenital anomalies in children of a local population in north india as it is one of the very few studies conducted in this region according to the review literature.The distribution of anomalies was plotted over a decade of time period.

In our study males tend to show more frequency of congenital anomalies than females. These results were in accordance with the results of few other studies reported.[8,9]

We categorised the congenital anomalies broadly according to their systems affected which included Gastrointestinal Tract (GIT), Genitourinary Tract (GUT), central nervous system (CNS) and rest were categorised as others. It was observed in our study that GIT anomalies were the most common anomaly among all types. Under this anorectal malformation were most frequent, followed by trachea-oesophageal fistulas. The findings were similar to a study done by Dutta *et al*. Who also reported similar results .[10]

Further it was observed that GUT malformations ranked second in the frequency table. Out of these abdominal wall defects were found to be most frequent in our frequency charts. Lastly the least Common malformations were the CNS malformations followed by the Others.

In contrary Sarkar et al. found that the predominant system involved was musculoskeletal system (33.2%) followed by gastrointestinal (GI) system (15%) and central nervous system (CNS) (11.2%) congenital anomalies affected significantly higher proportion of male babies than their female counterparts.[11] Almost similar results were also reported by Chaturvedi and Banerjee[12] which were also in contrary to the present study.

CONCLUSION:

As reported, our study highlights the high risk of these congenital anomalies still pertaining in our society. With increasing awareness, other causes of infant mortality like infections and nutritional deficiencies are being brought under control, but the prevalence rate of congenital anomalies is increasing due to exposure of teratogens. Therefore need of the hour is that strong preventive measures should be taken for these congenital anomalies.

REFERENCES:

1. WHO, The Global Burden of Disease: 2004 Update, World Health Organization, Geneva, Switzerland, 2008.
2. Birth Defects Research, Centers for Disease Control and Prevention, 2014.
3. GBD 2013 Mortality and Causes of Death, Collaborators (17 December 2014). "Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013.". Lancet. 385 (9963): 117–71. PMC 4340604 . PMID 25530442.
4. Bhat BV, Ravikumara M. Perinatal mortality in India-Need for introspection. Indian J Matern Child Health. 1996;7:31–3.
5. Agarwal SS, Singh U, Singh PS, Singh SS, Das V, Sharma A, Mehra P, Chandravati, Malik GK, Misra PK. Prevalence & amp; spectrum of

congenital malformations in a prospective study at a teaching hospital. Indian J Med Res. 1991 Dec; 94():413-9.
6. De Santis, Marco; Cesari, Elena; Cavaliere, Annafranca; Ligato, Maria Serena; Nobili, Elena; Visconti, Daniela; Caruso, Alessandro (September 2008). "Paternal exposure and counselling: Experience of a Teratology Information Service". Reproductive Toxicology. 26 (1): 42–46. PMID 18598753.
7. T. K. Jensen, "Children's health and environmental: a review of evidence," in A Joint Report from the European Environment Agency and the WHO Regional Office for Europe, T. K. Jensen, Ed., pp. 116–126, Official Publications of the European Communities, Luxembourg, 2002.
8. Golalipour MJ, Ahmadpour-Kacho M, Vakili MA. Congenital malformations at a referral hospital in Gorgan, Islamic republic of Iran. East Mediterr Health J 2005;11:707-15
9. Tootoonchi P. Easily identification congenital anomalies, prevalence and risk factors. Acta Med Iran 2003;41:15-9
10. Dutta HK, Bhattacharyya NC, Sarma JN, Giriraj K. Congenital malformations in Assam. J Indian AssocPediatrSurg 2010;15:53-5.
11. S. Sarkar, C. Patra, M. Dasgupta, K. Nayek, and P. Karmakar, "Prevalence of congenital anomalies in neonates and associated risk factors in a tertiary care hospital in eastern India," Journal of Clinical Neonatology, vol. 2, no. 3, pp. 131–134, 2013.
12. P. Chaturvedi and K. S. Banerjee, "Spectrum of congenital malformations in the newborns from rural Maharashtra," The Indian Journal of Pediatrics, vol. 56, no. 4, pp. 501–507, 1989.

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