

Frequency and Pattern of GIT Anomalies in Neonates: A Retrospective Study at NICU Mayo Hospital Lahore

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ABSTRACT

Aim: To acknowledge magnitude and spectrum of congenital anomalies of gastrointestinal tract in neonates and to establish possible factors resulting in these congenital anomalies.

Material And Methods: The design of this study was Retrospective observational study. This study was conducted at NICU department of pediatric surgery King Edward medical university / Mayo hospital Lahore from June 2021 to May 2022. Neonates admitted in NICU department of pediatric surgery with gastrointestinal congenital anomaly were included in this study. Neonates having congenital anomaly other than GIT were excluded. Patient information regarding diagnosis and possible cause of congenital anomaly was noted on prescribed proforma.

Results: During the study period total 256 neonates were admitted in neonatal ICU department of pediatric surgery Mayo hospital Lahore. Out of these 156(60.9%) neonates were having congenital anomalies of gastrointestinal tract while remaining 100(39.1%) neonates were having congenital anomalies of other structures. Most common congenital anomaly of GIT was anorectal malformations 35(22.4%) followed by Intestinal atresias in 30(19.2%).

Conclusion: Congenital anomalies play an important role in neonatal mortality rate of any developing country like Pakistan. Chromosomal disorders, environmental and infectious factors are major contributing factors. Gastrointestinal tract anomalies are the most common anomalies of neonates with predominance of anorectal malformations. Antenatal care and timely interventions can reduce frequency of these anomalies.

Keywords: Congenital anomalies, gastrointestinal tract, pattern.

INTRODUCTION

According to WHO congenital anomalies can be defined as structural and functional defects that occur during intrauterine life¹. A worldwide survey done by WHO every year 3-6% children are born with congenital anomalies². Globally 2.4 million children died in neonatal age and about 20 -30 % of them have congenital anomalies³. In 2020 infant mortality rate for Pakistan were 58.46 deaths per 1000 live births⁴. Children with congenital anomalies contribute to long term disability which impacts significant burden on individuals, family, health system, and society⁵. According to WHO survey February 28, 2022 nine of ten children with congenital birth defects are born in low- and middle-income countries. Congenital anomalies may be the result of one or more genetic, infectious, nutritional and environmental factors⁶⁻⁹. It is often difficult to identify the exact cause of congenital anomalies. These anomalies can be prevented by timely vaccination, adequate intake of folic acid or iodine, food supplementation and adequate antenatal and postnatal pregnancy care¹⁰. In department of pediatric surgery we are receiving a variety of neonatal birth defects with increasing frequency of birth defects related to GIT system. This study is planned to identify frequency and pattern of GIT congenital anomalies in newborns and to set protocols for better management and prevention of these birth defects.

MATERIALS AND METHODS

This retrospective observational study was conducted at department of pediatric surgery King Edward medical university / Mayo hospital Lahore from June 2021 to May 2022. Department of pediatric surgery is parent pediatric surgery ward having fully equipped neonatal intensive care unit. At present we are also in phase of building a new state of the art NICU with collaboration of friends of Mayo hospital. Friends of Mayo hospital are a group of old Kemkolians who are working physicians in North America and they have always a soft corner regarding better management of patients at mayo hospital. We are receiving neonates with congenital anomalies referred from pediatric medicine units as well as from affiliated hospitals. A prescribed Proforma was made giving patients information, associated congenital anomaly and

possible cause of that anomaly was noted. No special consent from parents was needed for this study.

RESULTS

During the study period total 256 neonates were admitted in neonatal ICU department of pediatric surgery Mayo hospital Lahore. Out of these 156(60.9%) neonates were having congenital anomalies of gastrointestinal tract while remaining 100(39.1%) neonates were having congenital anomalies of other structures. Of these 156(n=1) patients, there were 12(7.7%) cases with meconium ileus and 2(1.3%) cases with Pyloric stenosis. Isolated esophageal atresia was noted in 2(1.3%) patients while trachio esophageal fistula in 10(6.4%) patients. There was midgut volvulus in 3(1.9%), cleft palate in 1(0.6%) and obstructed umbilical hernia in 2(1.3%) patients. Hirsprungs disease was noted in 11(7.1%), necrotizing enterocolitis in 17(10.9%) and anorectal malformations in 35(22.4%) patients. Diaphragmatic hernia was in 11(7.1%) patients while diaphragmatic eventration was noted in 1(0.6%) cases. There were 30(19.2%) cases with Intestinal atresias at different segments of GIT. Omphalocele was noted in 8(5.1%), gastroschiasis in 4(2.6%) and malrotation was noted in 7(4.5%) cases.

Table 1: Showing Frequency and Percentages Of Different GIT Anomalies

Serial NO.	Anomaly	No of cases	Percentage
1	Meconium ileus	12	7.7
2	Pyloric stenosis	2	1.3
3	Esophageal atresia	2	1.3
4	Midgut volvulus	3	1.9
5	Cleft palate	1	0.6
6	Obstructed umbilical hernia	2	1.3
7	Hirsprungs disease	11	7.1
8	Necrotizing enterocolitis	17	10.9
9	Trachio esophageal fistula	10	6.4
10	Anorectal malformations	35	22.4
11	Diaphragmatic hernia	11	7.1
12	Diaphragmatic eventration	1	0.6
13	Intestinal atresias	30	19.2

14	Omphalocele	8	5.1
15	Gastroshiasis	4	2.6
16	Malrotation	7	4.5
Total		156	100

DISCUSSION

An estimated 6% children worldwide are born with congenital anomalies¹¹. Frequency and pattern of congenital anomalies depends on many factors like cultural, environmental and socio economic¹²⁻¹⁴. Chromosomal problems and exposure to medicines, chemicals and other toxic substances also play role in congenital birth defects¹⁵⁻¹⁷. In the present study, the predominant system having congenital anomalies is gastrointestinal tract followed by central nervous system. This is in contract to other national and international studies which found that musculo-skeletal malformations are more common among congenital anomalies¹⁸. Some studies also show predominance of central nervous system among congenital anomalies.¹⁹⁻²⁰. In the current study, Anorectal malformations are the most common congenital anomaly of gastro intestinal tract followed by Intestinal atresias. Maternal risk factors associated with these congenital anomalies were also kept in mind during this study. Maternal diabetes was the major contributing factor like in another studies²¹⁻²⁴.

Pakistan is an active member of WHO 63 world health Assembly resolution 2010 and being a state member, it is our responsibility that we should focus on prevention of these birth defects by:

- Encouraging research studies for more health surveillance at different areas of country.
- Developing expertise and building capacity for care of affected children.
- Raising awareness on importance of newborn screening pregnancies and their role in identifying infants born with congenital anomalies.
- Socio economic support of families who have children with birth defects and associated disabilities.
- Parent's education and more advanced technical expertise for surveillance of birth defects.
- Fortification of food samples and improving laboratory capacity for assessing risk of birth defects in low to middle income countries especially in Pakistan.
- Initiation programmes to eliminate rubella infection through immunization.

CONCLUSION

Congenital anomalies play an important role in neonatal mortality rate of any developing country like Pakistan. Chromosomal disorders, environmental and infectious factors are major contributing factors. Gastrointestinal tract anomalies are the most common anomalies of neonates with predominance of anorectal malformations. . Antenatal care and timely interventions can reduce frequency of these anomalies.

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