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Original article

Surgical outcome of congenital anomaly in newborn at Tertiary care Rural hospital

Dr . Anmol Batra[1] , *Dr.(Mrs)S.P.Pargaonkanr[2] , Dr.(Mrs) B.D.BORA[3] , Dr.Aatif Sattar[4]

[1]Resident , Pediatrics, Rural medical college, Loni ,Maharashtra
[2]Assistant Professor, Pediatrics ,Rural medical college , Loni ,Maharashtra
[3]Professor, Pediatrics , Rural medical college, Loni, Maharashtra
[4]Senior Resident, Sri Ganga Ram Hospital, Delhi.
Corresponding author*

ABSTRACT

Background: Congenital malformations are of major concern as they are cosmetically unacceptable, often associated with significant functional abnormalities and may sometimes even be life-threatening. Study was done to explore the outcome of surgical intervention in congenital anomalies in a tertiary care rural hospital.

Material and Methods: A prospective observational longitudinal hospital based study conducted in rural based tertiary care centre in the department of pediatrics from May 2016 to July2018. All the newborns were examined throughly for minor and major anomalies. Printed proforma was filled for recording of clinical examination of newborn and relevant investigations. Statistical analysis was applied to the data to study the types and factors affecting congenital anomalies.

Results : Total number of neonatal admissions during this period was 19600. Major anomalies were in 155 patients while minor anomalies were observed in 15 babies. 150 babies with major anomalies also had minor anomalies. Out of 170 patients 57 underwent surgical procedure. Outcome was favourable in 42 cases while 15 died in post operative period due to various reasons.

Conclusion: Management of these congenital anomalies as well as the associated morbidity and mortality constitute a significant healthcare problem. There is need to improve health care in tertiary area. Early diagnosis and surgrical intervention for major anomalies helps in preventing morbidity and mortality in neonatal period.

Keywords: Anomalies, Malformations, TEF, vacteral

INTRODUCTION

Congenital anomalies in babies are developmental disorders present at birth. According to a document of 1972 , WHO defined congenital malformation as a structural defect at birth[1] However , according to recent WHO fact sheets of October 2012 congenital anomalies can be defined as structural or functional anomalies ,including metabolic disorders , which are present at time of birth.[2] Structural malformations with other congenital anomalies are one of the most important cause of neonatal mortality in both developed and developing countries. It accounts for 8-15% of perinatal deaths and 13-16% of neonatal death in India[3].The exact cause of congenital anomalies is still unknown in almost 60% cases. For 20-25% of anomalies seems to be "multifactorial" cause. Congenital anomalies can be classified into major and minor types .Major anomalies impairs with function or greatly interfere with normal life of baby. It includes conditions like Down's syndrome ,hydronephrosis, gastroschisis, meningomyelocele, congenital heart disease, cleft lip, cleft palate , tracheoesophageal fistula etc. Minor anomalies does not impairs the normal function of life some examples are hammer toe, web toes, phimosis, undescended testis, umbilical hernia etc. Over the last few years there is rapid advancement in neonatal care and several advances in surgical techniques have significantly reduced mortality and morbidity.[4]

MATERIALS AND METHODS

Our study was prospective observational longitudinal hospital based study conducted in Pravara rural based tertiary care centre in the department of pediatrics , The study protocol was approved by Institutional

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ethical committee. we included the babies born with congenital anomalies in our hospital as well as neonates referred from outside. All the newborns were examined throughly for minor and major anomalies. All the newborns were examined at birth to rule out life threatening anomaly. All the newborns were examined again after 72 hours to look for any missed anomalies. Printed proforma was filled for recording of clinical examination of newborn and relevant investigations. Statistical analysis was applied to the data to study the types and factors affecting congenital anomalies.

Study subjects

For this study, the patient sample was collected from Rural Medical College, Loni Maharashtra. Total 17380 deliveries was attended in our hospital by paediatrician and out of this 123 babies was having congenital anomalies. 2220 neonates were referred from outside and thoroughly examined at time of admission to look for any congenital anomalies out of which 47 neonates had congenital anomalies. This study was conducted from May 2016 to July2018.

Inclusion criteria

1. All neonates delivered in or referred to NICU of our hospital with congenital malformations.
2. All neonates diagnosed with congenital malformation whose parents or guardians are ready to give written informed consent for the study.

Exclusion criteria

1. Still born.
2. Neonates referred from outside after surgical intervention.

Total babies included in this was 170 out of which 57 patients was operated by pediatric surgeon and their outcome is studied.

RESULTS

Table 1 Distribution of congenital anomalies.

Characteristic	Number	Percentage
Distribution of inpatient and outborn cases. Inborn (N=17380) Outborn (N=2220)	 123 47	 72.35% 27.65%
Distribution of the total congenital anomalies. Major Minor	 155 15	 91.17% 8.83%
Sex distribution of congenital anomalies. Males Females (P = 0.725)	 110 60	 64.7% 35.3%
Distribution according to consanguinity. Present	 92	 54.1%

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Absent (P= 0.646)	78	45.8%
Distribution according to gestational age of newborn. < 32 weeks 32-36 weeks > 36 weeks	 12 89 69	 7% 52.3% 40.58%
Distribution according to weight of new born. <1500gms 1500 - 2000gms 2000 - 2500 gms >2500gms	 35 43 48 44	 20.58% 25.29% 28.23% 25.28%
Distribution with maternal age < 30 years >30 years (P=0.0026 , Significant)	 65 105	 38.3% 61.7%

Table 2 Distribution of anomalies according to system involved.

Systems	Number	%
CNS	21	12.35%
Respiratory	23	13.53%
CVS	25	14.71%
GIT	33	19.41%
Renal	14	8.24%
Musculoskeletal system	28	16.47%
Ophthalmic	3	1.76%
Craniofacial	11	6.47%

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Miscellaneous	5	2.94%
Syndrome	7	4.12%

Table 3 Details of operative procedure performed and their outcome.

Diagnosis	Cases	Alive	Expired
Choanal atresia	2	2	0
Congenital hypertrophic pyloric stenosis	2	2	0
Diaphragmatic hernia	3	1	2
Doudenal atresia	3	3	0
Gastroschisis	1	0	1
Hydronephrosis	1	0	1
Imperforate anus	12	9	3
Inguinal hernia	4	4	0
Jejunal atresia	2	1	1
Omphalocele	1	0	1
Patent ductus arteriosus	1	1	0
Posterior urethral valve	1	1	0
Spina Bifida	1	1	0

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Tracheoesophageal fistula	21	15	6
Vacterl	1	1	0
VATER	1	1	0
Total	57	42	15

Table 4 Surgical outcome of cases

	Total	**Improved**	**Expired**
Operated	57	42	15
%	100	73.6	26.3

Total number of neonatal admissions during this period was 19600 , in total majority of babies with congenital anomalies were inborn. Major anomalies were in 155 patients while minor anomalies were observed in 15 babies. 150 babies with major anomalies also had minor anomalies. In our study P value for gender distribution was 0.72 ,males are affected more than females. P value for distribution of consanguinity was 0.646 and it was seen that consanguinity is an present in more than 50%. The congenital anomalies were higher in preterm newborns and newborns weighing less than 2500 grams. Majority of congenital anomalies were born to mothers of more than 30 years age P value was 0.0026 (Significant) .Gastrointestinal system was the commonest system involved among all the systems. Newborns having imperforate anus and tracheoesophageal fistula were operated majorly. Out of 170 patients 57 underwent surgical procedure. Outcome was favourable in 42 cases while 15 died in post operative period due to various reasons.

DISCUSSION

Teratology and dysmorphology are terminologies used to describe the various embryological, structural, functional or bio-metabolic disorders in a developing foetus giving rise to congenital malformations.[5] Today, “birth defects” have emerged as a major health concern globally, more so in developed countries where they contribute significantly to neonatal and early childhood mortality.

According to WHO, about 3 millions babies are born with major malformations every year. In a study by Eastern India prevalence of congenital anomalies was reported as 2.22%.[6] The classification of anomalies into major and minor is vague and varies in different studies. we had classified anomalies as major who had surgical, medical or cosmetic importance. A similar study was conducted from south India out of 40 congenital anomalies reported they have classified 70% as major while 30% were minor anomalies.[7] It is seen that major anomalies also had associated minor anomalies.Among major anomalies the tracheoesophageal fistula had highest number followed by CNS anomalies. Minor anomalies majorly includes preauricular tags, skin tags and nevus. Male new-borns had greater incidence of recognizable congenital birth defects than females . Similar dominance in males had earlier been reported by Barua et al (60.67% males 37.37% females).[8] This could be due to X- linked recessive factors or Y linked genetic basis. Consanguinity is known to increase incidence of congenital malformations in our study it was found that 92 out of 170 newborns having congenital anomalies had a history of consanguineous marriage. A similar study by shatanik sarkar also reported increased incidence of congenital anomalies in products of consanguineous marriage. The number of anomalies were high in

newborns ,who are premature or weighing less than 2500 grams. Akruti Parmar a study conducted in 2017 also showed 4 times more incidence in preterm babies. High incidence of congenital anomalies was seen in mothers having age more than 30 years. Other studies like Patel and Adhia, swain etal and grover have also reported positive correlation of anomalies with increased maternal age.GIT malformation comprised 19.41% of total anomalies making it the most common involved system. Most of the malformations affecting GIT are easily diagnosed and if treated in time they have a good prognosis. In our study tracheoesophageal fistula were found to be the single commonest malformation. 21 cases of TEF underwent surgery out of 15 survived and 6 expired .Surgery was performed for various major anomalies which was done for 57 out of total 170 cases. In most of the studies surgery was the main intervention done in neonatal period for major anomalies Swain et al [9]and Bhat and Babu[10]. 19 out of 170 patients of congenital anomalies expired in first 28 days of Birth. Verma et al [11] reported 12% perinatal mortality due to malformations. A study conducted in Pakistan which showed that out of 48 neonates who were operated for congenital anomalies only 4 patients died.[12]In our study there was 11.17% mortality rate , post operative mortality was more in referred cases.

CONCLUSION

There is a wide range of congenital anomalies among children in our environment. The management of these anomalies as well as the associated morbidity and mortality constitute a significant healthcare problem. There is need to improve health care in tertiary area. Early diagnosis and surgrical intervention for major anomalies helps in preventing morbidity and mortality in neonatal period. Postoperative management also plays a key role in preventing mortality.

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