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Research Article

A study on clinico etiological spectrum of intestinal obstruction in paediatric age group

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ABSTRACT

Background: Acute intestinal obstruction is very common surgical emergencies in paediatric age. There are many surgical causes for morbidity and mortality in paediatric age group of which intestinal obstruction giving large contribution. In most of studies child survival after surgical procedures for intestinal obstruction was good while the death rates were more when there was delay in presentation, and management. Morbidity, complications and mortalities are more severe when presented late. There is a delay in the initial presentation of intestinal obstruction cases due to various reasons.
Methods: Present study enrolled all the patients presenting with signs and symptoms of intestinal obstruction in Paediatric surgery unit of Dept. of surgery of Dr. BRAM Hospital, Raipur (C.G.), India during January 2014 to August 2015. Patients with intestinal obstruction were admitted in paediatric surgery ward with provisional diagnosis of acute intestinal obstruction. Immediately after admission, conservative management started till the hydration and urine output becomes normal. Routine and specific investigations were done. As the study includes most of cases of acute dynamic intestinal obstruction most of cases after initial resuscitation were managed by appropriate procedures. Postoperative care was done and outcome of the study was noted.
Results: Maximum cases of intestinal obstruction were in neonatal period and least in 5-14 years. Sex ratio is 2.5:1 (male to female). ARM was the major cause of obstruction in neonatal (<1 month) age group. IHPS and Hirschsprung's disease were most common cause of GI obstruction in 1 month to 1 year age group in our study. 4 of our cases did not have accurate diagnosis and were responded well to conservative management. Most of the patients presented with complain of not passing stool followed by distension of abdomen. 85.94% of cases are congenital in our study. Large gut portion was involved in majority of cases. Overall survival rate was 91.40%.
Conclusions: Present study concludes that congenital causes are more common in paediatric intestinal obstruction cases. Early diagnosis and intervention are crucial factors to improve the outcome.

Keywords: Intestinal obstruction, Pediatric age, Etiology

INTRODUCTION

Acute intestinal obstruction is very common surgical emergency in paediatric age. There are many surgical causes for morbidity and mortality in paediatric age group of which intestinal obstruction giving large contribution. In paediatric patients cause of intestinal obstruction varies with the age of patient.

In most of studies child survival after surgical procedures for intestinal obstruction was good while the death rates were more when there was delay in presentation, and management. Morbidity, complications and mortalities are more severe when presented late.[1,2] Abdomen is like a magic box, because any case admitted in the surgical ward as acute abdomen is dilemma to operating surgeon unless the box is opened.

Mechanical intestinal obstruction of varied etiology constitutes one of the important differential diagnoses of such acute abdomen. The diagnosis and management of intestinal obstruction requires both clinical and surgical acumen.

Many of these etiologies are congenital in origin and need staged repair with good functional outcome. Diagnosis of etiology and management of obstruction require both clinical and surgical expertise along with the judicious use of various diagnostic modalities. Though the classical presentation is pain abdomen and vomiting; further investigations are required to come to a preoperative diagnosis.[3-8]

There is delay in the initial presentation of intestinal obstruction cases due to various reasons. Due to these delays in initial presentation patients would have been dehydrated or complications would have set in.

It is necessary to measure the present clinical status of intestinal obstruction cases. Also to quantify their causes and health care needs as they commonly present with emergency condition. There are very few studies available in study area, with the above background the present study is done to see the clinic etiological spectrum of intestinal obstruction in paediatric age group.

METHODS

Intestinal obstruction is a common condition presenting in paediatric age. Present study enrolled all the patients presenting with signs and symptoms of intestinal obstruction in Paediatric surgery unit of Dept. of surgery of Dr. BRAM Hospital, Raipur (C.G.), India during January 2014 to August 2015. Ethical approval was obtained from institutional ethical committee.

Inclusion Criteria

- All paediatric patients (birth to 14 years) who presented with signs and symptoms of congenital / acquired intestinal obstruction.
- Patients presented with intestinal perforation secondary to distal obstruction.
- Adynamic obstruction due to congenital aganglinosis (hirschsprung"s disease)

Exclusion Criteria

- Patients with perforation peritonitis without distal obstruction.
- Adynamic obstruction (Secondary to medical conditions like uremia and electrolyte imbalance etc.)
- Oesophageal obstruction (Oesophageal stenosis, oesophageal atresia and achalasia cardia, etc).

Patients with intestinal obstruction (as above mentioned inclusion and exclusion criteria) were admitted in paediatric surgery ward with provisional diagnosis of acute intestinal obstruction. Immediately after admission, resuscitation with I.V. fluids started till the hydration and urine output becomes normal. Nasogastric decompression with Ryles's tube and infant feeding tubes was carried out. Close observation of all parameters like pulse rate, blood pressure, respiratory rates, abdominal girth, bowel sounds, tenderness and guarding was done.

The following investigations are carried out - CBC (Hb, TLC, DLC, Platelets), Blood grouping, urine routine and microscopy, RBS, urea, creatinine, serum electrolytes in all patients.

Plain X-ray abdomen erect was done in all patients. Special X-rays - invertogram and contrast enemas were done, when required. Ultrasonography of abdominopelvis was done in most of patients for confirmation of X ray findings, and associated others abnormalities. Majority of cases of acute dynamic intestinal obstruction most of cases after initial resuscitation were managed by appropriate procedures.

Postoperative care was done and outcome of the study was noted (in terms of survival and death). The results are tabulated stressing the following points- aetiology, age, sex, symptoms, examination findings, investigations, operative findings, and operative procedures adopted. Data was compiled in MS Excel and checked for its completeness and correctness, and it was analyzed.

RESULTS

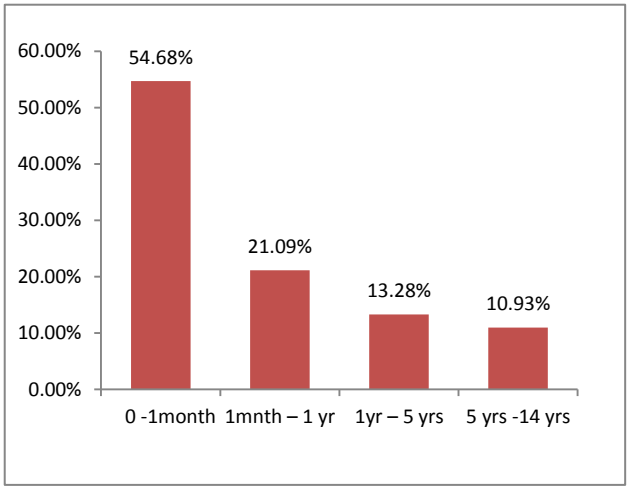

Figure 1: Age wise distribution of cases.

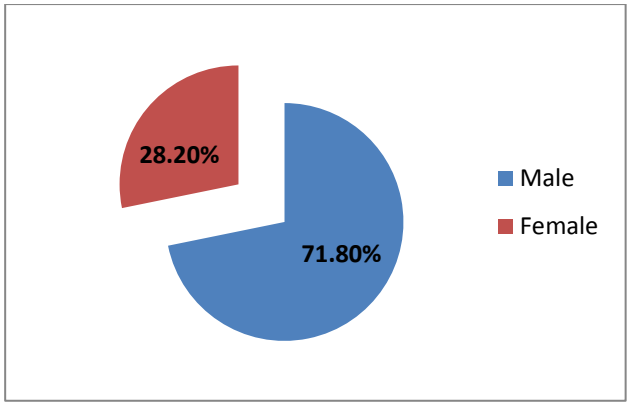

Figure 2: Gender wise distribution of study subjects.

Maximum cases of intestinal obstruction were in neonatal period and least in 5-14 years. Sex ratio is 2.5:1 (male to female) (Figure 1, 2).

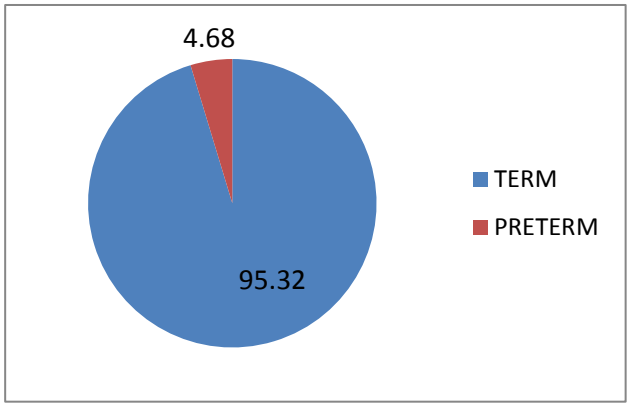

Figure 3: Distribution of study subjects according to term pregnancy (%).

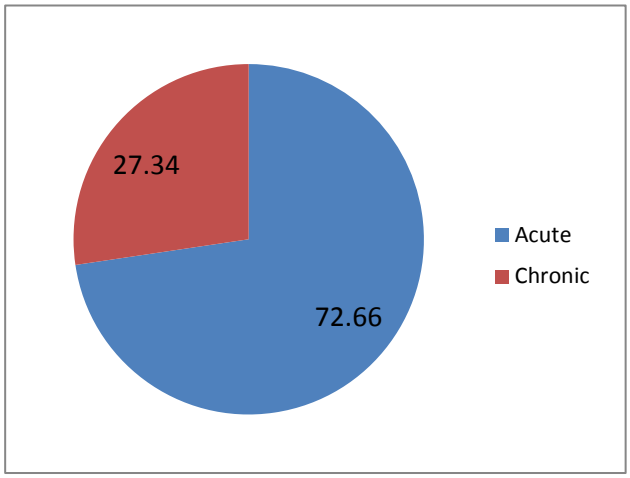

Figure 4: Distribution of study subjects according to type of presentation (%).

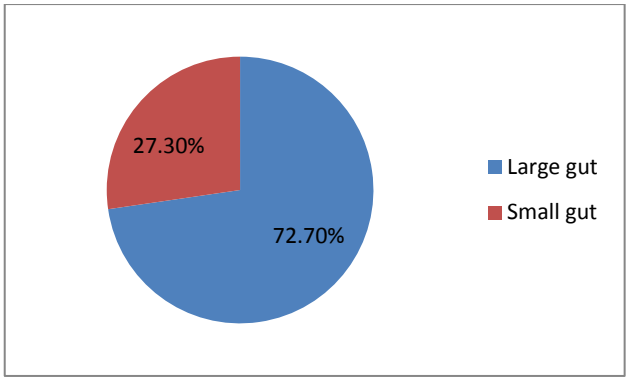

Figure 5: Proportion of involvement of intestinal segment.

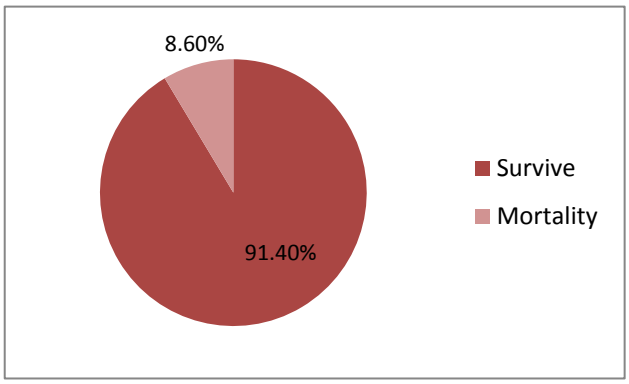

Figure 6: Distribution of subjects according to outcome.

Most common aetiology for intestinal obstruction in 0-1 month age group was ARM (81.42%) (Table 1). IHPS and Hirschsprung's disease were most common cause of G1 obstruction in 1 month to 1 year age group in our study (Table 2). During 1-5 years also Hirschsprung's disease was most common cause of GI obstruction presenting as chronic constipation (Table 3).

4 of our cases did not have accurate diagnosis and were responded well to conservative management. Cause of obstruction must be some inflammatory pathology and flimsy adhesions (Table 4). Most of children in our study were term babies (Table 5, Figure 3). Most of the patients were delivered at home by normal vaginal delivery (Table 6). Polyhydramnios was seen in cases of GI atresia. 43.76% did not have any antenatal USG (Table 7). Not passing stool was there in most of the patients (93.75%) followed by 116 (90.63%) had distention of abdomen (Table 8). Chronic obstruction was there in 35 (27.34%) cases (Table 9, Figure 4). 85.94% of cases were congenital in our study (Table 10). Large gut portion was involved in majority of cases. Overall survival rate was 91.40% (Figure 5,6).

Table 1: Neonatal presentation of intestinal obstruction (0 -1 month) (n = 77).

Etiology	Males	% (M)	Females	% (F)	Total	Total %
High ARM	34	48.57	14	20	48	68.57
Low ARM	7	10	2	2.85	9	12.85
Hirschprung ds	3	4.28	1	1.42	4	5.7
Intestinal Atresia	2	2.85	3	4.28	5	7.13
Obstructed inguinal hernia	1	1.42	0	0	1	1.42
Meconium ileus	1	1.42	1	1.42	2	2.85
Malrotation	0	0	1	1.42	1	1.42
Total	48	68.54	22	31.39	77	100

Table 2: Presentation of intestinal obstruction in age 1 month-1 year (n = 27).

Etiology	Males	% (M)	Females	% (F)	Total	Total (%)
IHPS	6	22.22	1	3.7	7	25.93
High ARM	0	0	2	7.4	2	7.4
Low ARM	5	18.5	0	0	5	18.5
Hirschsprung's disease	5	18.5	0	0	5	18.5
Intussusception	2	7.4	0	0	2	7.4
Duodenal duplication cyst	0	0	1	3.7	1	3.7
Mesenteric cyst	1	3.7	0	0	1	3.7
Meckel's diverticulum	1	3.7	1	3.7	2	7.4
Malrotation	0	0	1	3.7	1	3.7
Obstructed Inguinal hernia	1	3.7	0	0	1	3.7
Total	21	77.77	6	22.22	27	100

Table 3: Presentation of intestinal obstruction in age group 1-5 years (n = 17).

Etiology	Males	%(M)	Females	%(F)	Total	Total (%)
Hirschsprung's disease	11	64.7	0	0	11	64.70
Low ARM	2	11.76	0	0	2	11.76
Neoplasm	0	0	2	11.76	2	11.76
Unknown cause	2	11.76	0	0	2	11.76
Total	15	88.23	2	11.76	17	100

Table 4: Etiology of intestinal obstruction in 5-14 years (n = 14).

Etiology	Males	%(M)	Females	%(F)	Total	Total (%)
Hirschprung ds	2	14.28	0	0	2	14.28
Tuberculosis	2	14.28	4	28.56	6	42.85
Neoplasm	0	0	1	14.28	1	7.14
Unknown cause	4	28.56	1	14.28	5	35.71
Total	8	57.14	6	42.85	14	100

Table 5: According to term pregnancy (n = 128).

Pregnancy	No. of Cases	%
Term	122	95.32
Preterm	6	4.68
Total	128	100

Table 6: According to site of delivery (n = 128).

Site of Delivery	No. of Cases	%
Home	96	75
Hospital	32	25
Total	128	100

Table 7: According to finding of antenatal USG (n = 128).

Finding of antenatal USG	No. of Cases	%
Normal	67	52.34
Polyhydramnios	5	3.9
Not done	56	43.76
Total	128	100

Table 8: Presenting symptoms (n = 128).

Symptoms	No. of cases	%
Not passing stool	120	93.75
Distension of abdomen	116	90.63
Absent or abnormal anal opening	66	51.56
Vomiting-non bilious	79	61.71
Vomiting-bilious	20	15.62
Pain abdomen	37	28.90
Red currant jelly	2	1.5

Table 9: According to type of presentation (n = 128).

Presentation	No. of cases	%
Acute	93	72.66
Chronic	35	27.34
Total	128	100

Table 10: According to type of etiology (n = 128).

Etiology	No. of cases	%
Congenital	110	85.94
Acquired	18	14.06
Total	128	100

DISCUSSION

In our study maximum patients of Intestinal Obstruction are of neonatal age group and followed by 1 month to 1 year. Same type of results were found in study by Ogundoyin OO et al, (61.46% in less than 1 year age), Soomro BA et al, (37.3% in less than 1 year age), Ratan SR et al, (72% in less than 1 year age).[9-11] Most of our cases are neonates in both the sex. Sex ratio in our study is 2.5:1 (M:F).It is comparable with study done by Sirajuddin et al, Soomro BA et al and Ogundoyin et al.[9,10,12]

Current study hospital is tertiary referral center, most of our cases were neonates and small children (less than 1 yr) referred from other centers for the management, thats why most of our cases had congenital anomaly like ARM and Hirschsprung's disease. ARM and Hirschsprung's disease was found in large number in study done by Ogundoyin OO et al, 2009 (36.16%).[9] In many other studies their cases were of older age, so common causes in their study were intussusceptions. Among neonates ARM (81.42%) is the most common cause of intestinal obstruction followed by G.I. Atresias (7.13%) and Hirschsprung's disease (5.7%).

Saha et al also found ARM (35%) as a most common cause of G.I. obstruction followed by Hirschsprung's disease (22.9%).[13] In our institute cases of Hirschsprung's disease were presented later in age of 1 month-1 yr, so incidence of Hirschsprung's disease is less in neonates. IHPS and Hirschsprung's disease are most common

cause of intestinal obstruction in 1 month to 1 year age group in our study. During 1 to 5 years age group Hirschsprung's disease is our very common cause of intestinal obstruction. Soomro BA et al also found maximum number of patients of Hirschsprung's disease in this age group.[10]

In our study Tuberculosis and other inflammatory pathology is a common cause during 5-14 years age period and same findings are there in other studies. In our study most of deliveries were term and at home. Only in 3.9% deliveries had history of polyhydramnios. Most of our neonatal causes were ARM and Hirschsprung's disease and these diseases don't cause polyhydramnios. G.I. Atresia is very less (3.9%) in our study which is one common G.I. cause for polyhydramnios and prematurity.

In our study most common presenting symptom was not passing stool in all age group.

In our study not passing stool was found in 93.75% cases followed by distension of abdomen in 90.6%. This correlates with the studies by Ogundoyin et al, and Sirajuddin et al.[9,12]

CONCLUSION

Present study concludes that congenital causes are more common in paediatric intestinal obstruction cases. Early diagnosis and intervention (with dedicated surgical care) are crucial factors to arrest disease process and improving the outcome. The finding of the present study will be helpful for surgeons by giving idea of most common aetiologies in this area, as very few studies available.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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