STUDY IN PAEDIATRIC AGE GROUP UNDERGOING EMERGENCY LAPAROTOMY : OBSERVATIONAL STUDY

General Surgery

Dr. Akash KR. Gupta

Junior Resident, Dept. Of Surgery, RIMS, Ranchi.

Dr. Manoj KR Das

Junior Resident, Dept. Of Surgery, RIMS, Ranchi.

Dr. Marshal D Kerketta*

Associate Professor, Dept. Of Surgery, RIMS, Ranchi. *Corresponding Author

ABSTRACT

INTRODUCTION: Acute abdomen can be defined as “syndrome included by wide variety of pathological conditions that require emergent medical or more often surgical management.” Acute abdomen is caused due to gastrointestinal diseases such as intestinal obstruction and perforation peritonitis. **AIM:** The aim of our study was to observe the common cause in paediatric age group undergoing emergency laprotomy in our institutions. **MATERIAL AND METHODS:** This prospective study included 77 children aged below or equal to 15 years, underwent emergency laprotomy for acute intestinal conditions between January 2019 to December 2019 in RIMS, RANCHI. We excluded neonates, patients of jejunoileal colonic atresia and stenosis, anorectal malformation (ARM), congenital pouch colon, neonatal necrotizing enterocolitis (NEC), hirschprung's disease, gastrointestinal tumor. **RESULTS:** Total of 77 laprotomies were performed in emergency in children below or equal to 15 years age, 59 (76.62%) were boys and 18 (23.37%) were girls with male:female ratio of 3.2:1. 36 (46.75%) cases were done for acute intestinal obstruction and 41 (53.24%) cases were done for perforation peritonitis. 20 (25.97%) emergency laprotomy was performed in the age group 1-5 years and 57 (74.02%) were performed in the age group 5-15 years. Causes in order of frequency for intestinal obstruction were intussusceptions, post operative band/adhesion, abdominal tb obstruction, meckel's diverticulum and worm obstruction. Causes in order of frequency for perforation peritonitis were typhoid, abdominal tb, appendicular perforation and abdominal trauma. **CONCLUSION:** In our study maximum emergency laprotomy was performed in male patients with male:female ratio of 3.2:1. Perforation peritonitis was more common than acute intestinal obstruction. 5-15 year age group were more commonly affected. Typhoid ileal perforation was the most common cause for emergency laprotomy followed by intussusception.

KEYWORDS

INTRODUCTION

Acute abdomen can be defined as “syndrome induced by wide variety of pathological conditions that require emergent medical or more often surgical management”.^[1] Acute abdomen is caused due to gastrointestinal diseases such as intestinal obstruction, perforation peritonitis and acute appendicitis.^[2] The causes of obstruction in children are anorectal malformations, intussusception, Meckel's diverticulum, abdominal kochs, congenital band obstructions, Hirschprung's disease, ascariasis, post operative bands and adhesions, etc.^{[2],[3],[4]}

Intussusception remains a common cause of bowel obstruction in young children and results in significant morbidity and mortality.^{[2],[3],[5]} Typhoid ileal perforation is still prevalent in developing country like India and is associated with high morbidity and mortality in children.^{[6],[7]}

MATERIAL AND METHODS

This study was performed in total of 77 children aged below or equal to 15 years, who underwent emergency laprotomy for acute intestinal obstruction and intestinal perforation peritonitis. It was conducted in Department of surgery, RIMS, RANCHI from January 2019 to December 2019. We excluded neonates, patients of jejunoileal colonic atresia and stenosis, Anorectal malformation (ARM), congenital pouch colon, neonatal necrotizing enterocolitis (NEC), Hirschprung's disease, gastrointestinal tumours. Diagnosis was made by clinical history and examination supported by plain X-ray and ultrasonography of abdomen and pelvis.

RESULTS

Total 77 exploratory laprotomies were performed in emergency for intestinal perforation peritonitis and intestinal obstruction in children below or equal to 15 years of age from January 2019 to December 2019. They were 59 (76.62%) boys and 18 (23.37%) girls with a male:female ratio of 3.2:1. 20 (25.97%) emergency laprotomy was performed in the age group 1-5 years and 57 (74.02%) were performed in the age group 5-15 years.

Table 1

Total case	Male	Female	Male:female
77	59 (76.62%)	18 (23.37%)	3.2:1

Table 2

Age group in years	Intestinal obstruction	Perforation peritonitis	Total
1-5	11 (55%)	9 (45%)	20
5-15	25 (43.8%)	32 (56.14%)	57

36 (46.75%) laprotomies were performed for acute intestinal obstruction and 41 (53.24%) laprotomies were done for intestinal perforation peritonitis. Causes of acute intestinal obstruction and intestinal perforation peritonitis are shown in table 3 and table 4 in order of frequency.

Table 3: causes of intestinal obstruction in study

causes	No. of cases	percentage (%)
1. Intussusception	16	44.44%
2. post operative band/adhesion	08	22.22%
3. Abdominal Tb obstruction	07	19.44%
4. Meckel's diverticulum	03	8.33%
5. Worm obstruction	02	5.55%

Table 4: causes of perforation peritonitis in study

Causes	No. of cases	percentage (%)
1. Typhoid	18	43.9%
2. Abdominal Tb	08	19.5%
3. Appendicular perforation	08	19.5%
4. Abdominal trauma	07	17.07%

DISCUSSION

This study comprised 59 (76.62%) boys and 18 (23.37%) girls with a male to female ratio of 3.2:1. 20 (25.97%) patients were in the age group of 1-5 years and 57 (74.02%) were in between 5 to 15 years age group. Other studies showed male predominance as well.^{[2],[8],[9]}

The most common surgical cause of acute abdomen in children is appendicitis.^{[2],[10]} we have excluded acute appendicitis but included laprotomy due to appendicular perforation. Intussusception remains a commonest cause of bowel obstruction in young children and has been reported by many authors.^{[2],[3],[5],[10]} other causes of intestinal obstruction are Meckel's diverticulum, adhesions, ascariasis, etc.^{[2],[11],[12]} The commonest cause of intestinal obstruction in our study was also intussusception 16 (44.44%), followed by postoperative

bands/adhesions 08(22.22%), abdominal tb obstruction 07(19.4%), Meckel's diverticulum 03(8.3%) and worm obstruction 02(5.5%). Ileal perforation peritonitis, mostly due to typhoid perforation in children, is the leading cause of peritonitis and still prevalent in many developing countries.^{[6],[7],[13]} The causes of perforation peritonitis in our study include typhoid 18(43.9%) cases followed by abdominal tuberculosis 08(19.5%) cases, appendicular perforation 08(19.5%) cases and abdominal trauma 07(17%) cases.

Plain radiographs of abdomen in erect position are most useful when intestinal obstruction or perforation of viscus is the concern. In majority of cases of acute abdomen in children, USG of abdomen and pelvis can provide specific diagnosis.^{[1],[10],[14]} In modern era of technology, computed tomography (CT) scan, magnetic resonance imaging (MRI) and other scanning and laparoscopy are also advocated for the diagnosis of acute abdomen in children.^{[10],[14],[15]} In our study, diagnostic work up of patients included detailed clinical history and examination and supported with plain X-ray and USG of abdomen and pelvis.

The surgical objectives at laprotomy for perforation peritonitis are cleaning of contamination into the peritoneal cavity with either one of the following: primary repair of perforation, wedge resection and simple closure, segmental resection of diseased bowel and anastomosis, creation of stoma, etc. depending on the condition of the involved bowel segment and the patient.^{[6],[7],[13],[16]} we have operated on 41 cases of perforation peritonitis in children of which 35(85.3%) were boys and 06(14.6%) were girls. 09(45%) patients were in 1-5 years of age group and 32(56.14%) patients were from 5-15 years of age group. The surgical treatments done were simple primary closure of perforation after freshening of margin, segmental resection and anastomosis, ileostomy, and abdominal drainage.

Intussusception remains the most common cause of intestinal obstruction in children and results in significant morbidity and mortality. Treatment options for the intussusception are hydrostatic/barium enema reduction, exploratory laprotomy (manual reduction, segmental bowel resection for gangrene and anastomosis, hemicolectomy, creation of stoma, etc.) and laparoscopic procedure.^{[2],[3],[5],[7],[18],[19]} In our study we operated a total of 16 cases of intussusception of which 10 were boys and 6 were girls. Maximum (10 cases) were in 5-15 years age group and only 6 cases were in 1-5 years age group. In 5 cases operative manual reduction was possible and 6 cases had gangrenous bowel and required bowel resection.

Meckel's diverticulum may present as diverticulitis, intestinal obstruction, perforation peritonitis and intestinal bleeding. Treatment options are resection of diverticulum/diverticulectomy, wedge resection and anastomosis, segmental resection with Meckel's and anastomosis, etc. and can be done by open surgery or laparoscopically.^{[11],[20],[21]} In our study 3 patients of Meckel's diverticulum presented with obstruction were operated out of which 2 were boys and 1 girl. All 3 patients were having Meckel's diverticulum with gangrene of bowel segment in whom resection of gangrenous segment was done with ileostomy.

Abdominal tuberculosis is treated conservatively with anti tuberculous drugs alone but patients presenting with acute intestinal obstruction and perforation peritonitis may need laprotomy for diagnosis and relief of bowel obstruction and perforation.^[22] we included 15 cases of abdominal tuberculosis of which 7 patients presented with intestinal obstruction and 8 cases presented with perforation peritonitis. The operative procedure done were adhesiolysis and biopsy, ileo-transverse anastomosis/bypassing the stricture and ileostomy. Ascariasis is the infestation by large intestinal nematode of man, attributed to poor hygiene and low socio economic conditions. Most cases of intestinal obstruction due to *Ascaris lumbricoides* can be managed conservatively. However emergency surgery like enterotomy, milking of worm in large intestine and resection and anastomosis is needed in patients with features of gangrene and perforation.^{[4],[12]} we had 2 cases of worm obstruction in whom enterotomy was done for removal of bunch of worms.

CONCLUSION

In our study maximum emergency laprotomy was performed in male patients with male:female ratio of 3.2:1. Perforation peritonitis was more common than acute intestinal obstruction. 5-15 year age group were more commonly affected. Typhoid ileal perforation was the most

common cause for exploratory laprotomy followed by intussusceptions. Other important causes were Abdominal tuberculosis, post operative bands/adhesions, appendicular perforation, meckel's diverticulum and worm obstruction.

REFERENCES

1. Aviral, Chana RS, Ahmad I. Role of ultrasonography in the evaluation of children with acute abdomen in the emergency set-up. *J Indian Assoc Paediatr Surg* 2005;10:41-3.
2. Pujari AA, Methi RN, Khare N. Acute gastrointestinal emergencies requiring surgery in children. *Afr J Paediatr Surg* 2008;5:61-4.
3. Saleem MM, Al-Momani H, Abu Khalaf M. Intussusception: Jordan University Hospital experience. *Hepatogastroenterology* 2008;55:1356-9.
4. Mishra PK, Agrawal A, Joshi M, Sanghvi B, Shah H, Parelkar SV. Intestinal obstruction in children due to Ascariasis: A tertiary health centre experience. *Afr J Paediatr Surg* 2008;5:65-70.
5. Ugwu BT, Legbo JN, Dakum NK, Yiltok SJ, Mbah N, Uba FA. Childhood intussusception: A 9-year review. *Ann Trop Paediatr* 2000;20:131-5.
6. Ekenze SO, Okoro PE, Amah CC, Ezike HA, Ikefuna AN. Typhoid ileal perforation: Analysis of morbidity and mortality in 89 children. *Niger J Clin Pract* 2008;11:58-62.
7. Uba AF, Chirdan LB, Ituen AM, Mohammed AM. Typhoid intestinal perforation in children: A continuing scourge in a developing country. *Pediatr Surg Int* 2007;23:33-9.
8. Grosfeld JL, Molinari F, Chaet M, Engum SA, West KW, Rescorla FJ, et al. Gastrointestinal perforation and peritonitis in infants and children: Experience with 179 cases over ten years. *Surgery* 1996;120:650-6.
9. Annigeri VM, Mahajan JK, Rao KL. Etiological spectrum of acute intestinal obstruction. *Indian Paediatr* 2009;46:1102-3.
10. Zhou H, Chen YC, Zhang JZ. Abdominal pain among children re-evaluation of a diagnostic algorithm. *World J Gastroenterol* 2002;8:947-51.
11. Menezes M, Tareen F, Saeed A, Khan N, Puri P. Symptomatic Meckel's diverticulum in children: A 16-year review. *Pediatr Surg Int* 2008;24:575-7.
12. Baba AA, Ahmad SM, Sheikh KA. Intestinal ascariasis: The commonest cause of bowel obstruction in children at a tertiary care center in Kashmir. *Pediatr Surg Int* 2009;25:1099-102.
13. Nuhu A, Dahwa S, Hamza A. Operative management of typhoid ileal perforation in children. *Afr J Paediatr Surg* 2010;7:9-13.
14. Tseng YC, Lee MS, Chang YJ, Wu HP. Acute abdomen in pediatric patients admitted to the pediatric emergency department. *Pediatr Neonatol* 2008;49:126-34.
15. Joshi AV, Sanghvi BV, Shah HS, Parelkar SV. Laparoscopy in management of abdominal pain in children. *J Laparoendosc Adv Surg Tech A* 2008;18:763-5.
16. Onen A, Dokucu AI, Cödem MK, Öztürk H, Otçu S, Yücesan S. Factors effecting morbidity in typhoid intestinal perforation in children. *Pediatr Surg Int* 2002;18:696-700.