

Frequency of Various Etiological Causes of Intestinal Obstruction in Children

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ABSTRACT

Aim: To determine the frequency of causes of intestinal obstruction among children.

Study design: This is a cross sectional study.

Place and duration of study: This study was conducted in Allama Iqbal Memorial Teaching Hospital Sialkot. Study was completed in six months duration from January 2022 to June 2022.

Methodology: Children with age <12 years admitted in the department of pediatrics and undergoing exploratory laparotomy for intestinal obstruction and fulfilling inclusion criteria were included in this study. On exploratory laparotomy causes of intestinal obstruction were noted like adhesions, intussusceptions, round worms and obstructed hernia. Collected data was analyzed using SPSS version 20 software. Percentages, means and standard deviations were determined.

Results: Total 170 cases were studied including 107(62.9%) males and 63(37.1%) females. Range of the ages was one month to 12 years with mean age of 4.37±2.6 years. Most common cause of intestinal obstruction was adhesions followed by intussusception found in 71(41.7%) and 55(32.3%) cases respectively.

Conclusion: Frequency of etiological causes of intestinal obstruction varies in different age groups in children, however adhesions are most common cause of intestinal obstruction in children, while intussusception is second most common cause.

Key words: Intestinal obstruction, Adhesion, Intussusception, Etiological causes, Children

INTRODUCTION

Intestinal obstruction is a very commonly reporting surgical emergency.¹ It is common among adults as well as children. It is associated with high morbidity and mortality rate.² Children with intestinal obstruction suffer from severe complications if not treated immediately hence experienced doctors are required in pediatric department to diagnose and manage such cases properly.³

A child presenting with acute abdominal pain, distension, vomiting and constipation must be suspected of having intestinal obstruction⁴.

Common etiological causes of intestinal obstruction include adhesions, obstructed hernias, intussusception especially in infants, volvulus and round worms most common in older children⁵. Intestinal obstruction is a life threatening emergency if not diagnosed and treated in time, causes compromise of blood supply to the intestines leading to necrosis, gut perforation and eventually sepsis and death of the patient.^{6,7} Hence early diagnosis and proper immediate treatment is necessary. There are many international studies on intestinal obstruction in children but none of them have focused on intestinal obstruction in Pakistani children population which has different geographical and cultural background⁸⁻¹⁰.

Hence this study has been conducted to help in developing strategies for the immediate diagnosis and treatment of intestinal obstruction among children in our country to reduce morbidity and mortality rate.

MATERIALS AND METHODS

This is a cross sectional study conducted in Allama Iqbal Memorial Teaching Hospital Sialkot. Study sample (n=170) was calculated using online WHO sample size calculator. Sample selection was done by convenient sampling technique. Study was started in January 2022 and completed after six months in June 2022. Ethical approval taken from the ethical review committee of the hospital. Consent was taken from the guardians/parents of all the study cases for including their data in this study. Patients admitted in the department of pediatric surgery diagnosed cases of intestinal obstruction with signs and symptoms from two days and not

managed conservatively were planned for the surgery and were included in this study to determine frequency of etiological causes of intestinal obstruction. After taking history proper relevant examination was done, diagnosis was established after all necessary investigations as indicated in various patients like ultrasound abdomen, contrast studies and x-ray abdomen done. Intravenous blood sample (2ml) taken in a serum vial and (2 ml) in separate CBC vial, complete blood count, serum profile and serum electrolytes done. CT scan and MRI abdomen was done in the cases where ultrasound was not conclusive. According to exclusion criteria patients with age >12 years, previously operated, history of radiation or chemotherapy and those managed after conservative managed were not included in this study. After anesthesia fitness exploratory laparotomy was done and etiological cause of the obstruction was noted and managed accordingly. All data was analyzed using SPSS version-20. Percentages were determined for qualitative variables like gender and cause of intestinal obstruction (adhesions, intussusception, round worms and obstructed inguinal hernia) clinical features of the patients (vomiting, abdominal pain, distension and constipation), while means and standard deviation were calculated for quantitative variables like age.

RESULTS

There were 170 cases in this study including 107(62.9%) males and 63(37.1%) females. Ages of the patients in study group were one month to 12 years with mean age of 4.37±2.6 years. All Patients (100%) with intestinal obstruction presented with vomiting, abdominal distension was present in 162(95.3%), abdominal pain was present in 154(90.6%) and 104(61.2%) patients presented with constipation (Table-I).

Table-I: Frequency of clinical features of intestinal obstruction in study group (n=170)

| Clinical Features | Frequency |
|----------------------|-------------|
| Vomiting | 170 (100) |
| Abdominal distension | 162 (95.3%) |
| Abdominal pain | 154 (90.6%) |
| Constipation | 104 (61.2%) |

Most common cause of intestinal obstruction was adhesions found in 71(41.7%) cases followed by intussusception present in

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55(32.3%) cases (Table-II). Most of the cases were below three years of age with the frequency of 72(42.3%). 59(34.7%) were between 4 years, 28(16.5%) were between 7-9 years while least patient (6.5%) were between 10-12 years (Table-III).

Table-II: Frequency of etiological causes of intestinal obstruction in study group (n=170)

| Etiological causes | Frequency |
|----------------------------|------------|
| Adhesions | 71 (41.7%) |
| Intussusception | 55 (32.3%) |
| Obstructed inguinal hernia | 30 (17.6%) |
| Round worms | 14 (8.2%) |

Table-III: Age distribution of the patients in study group (n=170)

| Age groups (years) | Frequency |
|--------------------|------------|
| ≤ 3 | 72 (42.3%) |
| 4-6 | 59 (34.7%) |
| 7-9 | 28 (16.5%) |
| 10-12 | 11 (6.5%) |

DISCUSSION

Intestinal obstruction is a very common pediatric surgery emergency.¹¹ It has many causes depending upon the age of the children. High incidence has been seen in infants and older children.¹² There are various causes according to geographical and cultural differences.¹³ In this study most common cause of the obstruction was intestinal adhesions followed by intussusception found in 71(41.7%) and 55(32.3%) cases respectively. Most of the cases were below three years of age with the frequency of 72(42.3%). 59(34.7%) were between 4 years, 28(16.5%) were between 7-9 years while least patient (6.5%) were between 10-12 years. In our study older children were limited in number that may be due to they are mostly treated by locally general surgeons hence minimum report to pediatric surgeons. Usually adhesions causing intestinal obstruction are inflammatory in nature.¹⁴ Other studies report intussusception as a most common etiology of intestinal obstruction.^{14,15} But in our study it is second most common etiology. In our study 170 cases underwent surgery for intestinal obstruction. This frequency is higher than that in the west.¹⁶ A study conducted by David et al stated that mean duration of symptoms among children with intestinal obstruction was 3.94±2.65 days, while in our study mean duration of symptoms was 2.35±1.74 days.¹⁷ A study conducted by Harshal et al reported age, gender, duration of symptoms, duration of disease, presenting signs and symptoms as study effect modifiers. Strong association was found between age of the patients and etiological causes of the disease. It was found that obstructed hernia, intussusception and adhesions were associated with gender.¹⁸ Previous studies have reported worms as a most common cause of intestinal obstruction in 63.2% and adhesions in 11% cases.^{19,20} In this study causes of intestinal obstruction and demographics of the patients were reported. Observer and selection biasing may be found in this study because it was conducted in a single center.

CONCLUSION

Frequency of intestinal obstruction and its etiological causes vary in different age groups. Adhesions were found most common cause of Intestinal obstruction followed by intussusception among children. Disease presentation depends on the level of intestinal obstruction.

Limitation of study: This is a single center study with limited number of patients hence a multicentric study is required to get more authentic results.

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