

A CROSS SECTIONAL STUDY OF GASTROINTESTINAL OBSTRUCTION IN NEONATES AND ITS MANAGEMENT

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Abstract

Introduction: One of the most common acute abdominal conditions in children is complete or incomplete bowel obstruction, which constitutes between 20-35% of emergency admissions to surgical areas of the hospital. It makes up about 20% of hospital surgical emergencies. For primary care, the most common is finding incomplete obstructions (passing gas, not stool), which in some cases end up being complete. A substantial mechanical disruption or full halt of the passage of materials through the gut caused by a condition that develops a blockage in the intestine is referred to as intestinal obstruction. Cramping discomfort, vomiting, constipation, and a lack of gas are the symptoms.

Materials and Methods: This prospective study was conducted in Department of Paediatrics, Santhiram Medical College, Nandyal, Andhra Pradesh over a period of 1 year from January 2023 to December 2023. 120 cases presented with neonatal intestinal obstruction were included in the study. Neonates of Multiple anomalies, Necrotising enterocolitis, anorectal malformation and esophageal atresia were excluded from the study. All neonates were admitted and their dehydration and electrolytes imbalance were corrected by administration of intravenous fluids and nasogastric tube aspiration. Vitamin K and prophylactic broad spectrum antibiotics were started. Plain x-ray abdomen was done in all cases in our study. Ultrasound scan was done in all cases to rule out renal and other anomalies. Contrast radiography performed in selected cases.

Results: Out of 120 cases 56 neonates had bowel atresia, 6 had meconium ileus, 18 had malrotation, 30 had HD and 10 had Meckel's diverticulum. There were 86 males and 34 females (M: F- 2.5:1). Among males, 36 had intestinal atresia, 4 had meconium ileus, 14 had malrotation, 8 had HD, 10 had malrotation, and 4 had Meckel's diverticulum. Age of presentation varied from 1 day to 24 days. Median weight for patients with intestinal atresia and meconium ileus were 2 Kg (1.3-3 kg), Median weight was 2.5 kg for malrotation and Meckel's diverticulum and for HD it was 2.5 kg (1.6-2.9 kg).

Conclusion: Intestinal atresia was the most common cause of neonatal intestinal obstruction in our study and septicaemia was most common cause of morbidity and mortality. Delayed presentation, prematurity, low birth weight and associated congenital anomalies increased morbidity and mortality in these patients. Post-operative management and nursing care is as important as operative skill for eventual recovery of these patients. Early diagnosis and treatment, availability of neonatal and paediatric intensive care units, leads to better outcome.

Key Words: intestinal obstruction, malrotation, Meckel's diverticulum, paediatric intensive care.

INTRODUCTION

One of the most common acute abdominal conditions in children is complete or incomplete bowel obstruction, which constitutes between 20-35% of emergency admissions to surgical areas of the hospital. It makes up about 20% of hospital surgical emergencies.¹ For primary care, the most common is finding incomplete obstructions (passing gas, not stool), which in some cases end up being complete. A substantial mechanical disruption or full halt of the passage of materials through the gut caused by a condition that develops a blockage in the intestine is referred to as intestinal obstruction. Cramping discomfort, vomiting, constipation, and a lack of gas are the symptoms.²

The diagnosis is clinical, and an X-ray of the abdomen confirms it. In most cases of full blockage, treatment includes fluid replacement, nasogastric suctioning, and surgery.³ Twisting, a torsion of the intestine on its axis or on the mesentery for which there are often predisposing conditions, is the most prevalent cause of mechanical blockage in our peripheral (lips, tumors, etc.) It is common in children and nearly invariably affects the ileum.⁵

When food and liquids cannot pass through the digestive tract due to a blockage, this is known as intestinal obstruction. It is also known as bowel blockage, gastrointestinal obstruction, or bowel obstruction. Many factors can contribute to intestinal blockage. It is more likely in patients who have particular types of cancer or who have advanced cancer.⁶

This study was done to analyze the etiology, clinical presentation and outcome of neonatal intestinal obstruction at our institute.

MATERIALS AND METHODS

This prospective study was conducted in Department of Paediatrics, Santhiram Medical College, Nandyal, Andhra Pradesh over a period of 1 year from January 2023 to December 2023. 120 cases presented with neonatal intestinal obstruction were included in the study.

Neonates of Multiple anomalies, Necrotising enterocolitis, anorectal malformation and esophageal atresia were excluded from the study.

All neonates were admitted and their dehydration and electrolytes imbalance were corrected by administration of intravenous fluids and nasogastric tube aspiration. Vitamin K and prophylactic broad spectrum antibiotics were started.

Plain x-ray abdomen was done in all cases in our study. Ultrasound scan was done in all cases to rule out renal and other anomalies. Contrast radiography performed in selected cases.

All cases underwent their respective operations depending upon the diagnoses. Cases of Duodenal atresia were treated with Kimura’s duodeno-duodenostomy. Cases of Jejunal, ileal atresia, Meckel’s diverticulum were treated by resection and followed by anastomosis. Meconium ileus was treated with enterotomy, Hirshprung Disease (HD) were managed with initial colostomy; Malrotations were managed by Ladd procedure.

RESULTS

Out of 120 cases 56 neonates had bowel atresia, 6 had meconium ileus, 18 had malrotation, 30 had HD and 10 had Meckel’s diverticulum. There were 86 males and 34 females (M: F- 2.5:1).

Among males, 36 had intestinal atresia, 4 had meconium ileus, 14 had malrotation, 8 had HD, 10 had malrotation, and 4 had Meckel’s diverticulum. Age of presentation varied from 1 day to 24 days. Median weight for patients with intestinal atresia and meconium ileus were 2 Kg (1.3-3 kg), Median weight was 2.5 kg for malrotation and Meckel’s diverticulum and for HD it was 2.5 kg (1.6-2.9 kg).

	0-3 days	4-15 days	15-28 days
Duodenal Atresia	10 (100%)	--	--
Jejunal Atresia	18 (100%)	--	--
Ileal Atresia	24 (85.8%)	4 (14.3%)	--
Meuconium Ileus	4 (66.6%)	2 (33.3%)	--
Malrotation	--	12 (66.7%)	6 (33.3%)
Hirshprung Disease	--	8 (26.7%)	22 (73.3%)
Meckles Diverticulum	--	4 (40%)	6 (60%)

Table 1: Age at presentation

	Total	Bilious Vomiting	Not Passed Stool Since Birth	Abdominal Distention	H/O Poly hydromnios	H/O Premature Birth
Duodenal Atresia	10	10 (100%)	10 (100%)	-	10 (100%)	10 (100%)
Jejunal	18	18 (100%)	18 (100%)	-	18 (100%)	18 (100%)

Atresia						
Ileal Atresia	28	28 (100%)	28 (100%)	24(85.7%)	22 (78.6%)	22 (78.6%)
Meuconium Ileus	6	6 (100%)	6 (100%)	6 (100%)	2 (33.3%)	2 (33.3%)
Malrotation	18	18 (100%)	-	2 (11.1%)	-	2 (11.1%)
Hirshprung Disease	30	6 (20%)	6 (20%)	30 (100%)	2 (6.6%)	4 (13.3%)
Meckles Diverticulum	10	10 (100%)	-	8 (80%)	-	-

Table 2: Clinical presentation

Complication	Number	Percentage
Septicaemia	64	53.3%
wound infection	20	16.6%
Pneumonitis	10	8.3%
Anastomotic leak	6	5%

Table 3: Complications

Causes	Number	Mortality
Duodenal Atresia	10	6 (60%)
Jejunal Atresia	18	8 (44.5%)
Ileal Atresia	28	6 (21.4%)
Meuconium Ileus	6	-
Malrotation	18	-
Hirshprung Disease	30	2 (6.6%)
Meckles Diverticulum	10	2 (20%)

Table 4: Mortality

DISCUSSION

There were 120 cases of neonatal intestinal obstruction over a period of 3 years, it was most common in males 86 than females 34 (M: F- 2.5:1). The male preponderance in this study similar with reports from other centres.

In our study, atresia was the most common cause for neonatal intestinal obstruction. This finding was similar to other studies conducted in India where intestinal atresia was the most common cause of neonatal intestinal obstruction followed by Hirsch sprung disease. Presentation of atresia is usually early. Early onset of symptoms and rapid deterioration of patient's condition are commonly noted in intestinal atresia and meconium ileus was the probable cause of early presentation. Gestational age and birth weight which are also an important determinant in neonatal surgical outcome, were also comparable to that in other studies.⁷

Among other causes, malrotation was one of the important (15%) causes of neonatal intestinal obstruction. It was caused by a failure of normal bowel rotation. Incidence in our study was higher than its results of similar study from Bangladesh.⁸

In our study, 58 (48.4%) neonates were preterm (less than 37 completed weeks) and 62 (51.7%) were full term. Gestational age was variable between 31 and 40 weeks. State of maturity was an important determinants in neonatal surgical outcome.⁹

The mortality associated with neonatal intestinal obstruction ranged between 21 and 45%. In developing countries, unlike Europe where it was less than 15%. Some of its factors attributing to the high mortality in developing countries included prematurity, late presentation, associated severe congenital anomalies and complications of surgery as well as lack of neonatal intensive care facilities.¹⁰

CONCLUSION

Intestinal atresia was the most common cause of neonatal intestinal obstruction in our study and septicaemia was most common cause of morbidity and mortality. Delayed presentation, prematurity, low birth weight and associated congenital anomalies increased morbidity and mortality in these patients. Post-operative management and nursing care is as important as operative skill for eventual recovery of these patients. Early diagnosis and treatment, availability of neonatal and paediatric intensive care units, leads to better outcome.

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