

Neonatal Intestinal Obstruction

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Abstract:

Aim: To study the clinical presentation, etiology, management and outcome of neonatal intestinal obstruction in children less than 28 days old over a period of 5 years in our department and review of relevant literature.

Materials And Methods: It is a prospective study of 100 children within 28 days of birth with intestinal obstruction were managed from May 2010 to May 2015 at our department of paediatric surgery. Excluded from this study Anorectal malformations and Hirshsprungs disease.

Results: The commonest cause was intestinal atresia 53, pyloric atresia/web one, duodenal atresia/web 17, jejuna atresia 15, ileal atresia 14, colon atresia 3, rectal atresia two, followed by multiple site atresias two, followed by malrotation and mid gut valvulus 22, Meconium ileus 11, pneumoperitonium and peritonitis 5, gastric perforation 3, anular pancreas 2, meckles diverticulum one, NEC 3. Out of 100 neonates there were 65 males and 35 females. The mortality rate was 26%.

Conclusions: Intestinal obstruction is a common neonatal surgical emergency at our centre. The incidence is higher in males than females. Abdominal distension, vomiting and constipation are the predominant presenting features. Intestinal atresias are the commonest types of neonatal intestinal obstruction 53%, and malrotation and midgut valvulus 22%, Meconium ileus 11% and pneumoperitonium and peritonitis 5% are the next common types in our study. Mortality is significantly higher in those who present late >72 hours than in those presenting between 24 to 72 hours. Higher mortality was noted in patients presenting late and jejunal atresia, multiple atresias, low birth weight, perforation, peritonitis and septicemic shock. Early diagnosis, surgical management and Neonatal intensive care management can reduce mortality.

Key words: Intestinal obstruction, Neonate.

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I. Introduction

The Neonatal period is defined as the first 28 days after birth. Neonatal intestinal obstruction occurs 1 in 1500 live births[1]. Neonatal intestinal obstruction is one of the most common new born surgical emergencies[2] Neonatal intestinal obstruction is one of the most common emergencies in pediatric surgery. Intestinal obstruction should be suspected in any neonate with persistent vomiting, distention of abdomen and not passing stools[3]. The various causes of intestinal obstruction in neonates include atresias, malrotation and midgut valvulus, meconium ileus, pneumoperitonium and peritonitis, gastric perforation, anular pancreas, meckles diverticulum and NEC. Neonates with unrecognised intestinal obstruction deteriorate rapidly leading to increase in morbidity and mortality, results of surgical treatment in those cases may be poor. Intestinal obstruction is a potentially life threatening condition, undiagnosed or delay may lead to respiratory complications due to splinting of diaphragm by abdominal distension and possible aspiration of vomitus, to severe dehydration, resulting in peripheral circulatory failure, poor tissue perfusion and metabolic acidosis and possibly to septicaemia, perforation or gangrene due to compromised vascularity of the bowel and death, hence early recognition and prompt treatment is required. This study was conducted to find out various causes and outcome of intestinal obstruction in neonates in our region.

II. Material and Methods

From May 2010 to May 2015 a total number of 100 neonatal intestinal obstruction cases admitted and operated. The anorectal malformations and Hirshsprungs disease were excluded from this study.

Investigations

All patients had a plain x-ray of the abdomen in erect posture, ultrasound abdomen, complete blood picture, serum electrolytes and creatinine and upper gastrointestinal series or barium enema. All patients were admitted, their dehydration and electrolytes imbalance corrected by administration of intravenous fluids and nasogastric tube aspiration, vitamin K and prophylactic broad spectrum antibiotics were started and blood cross matched prior to operation.

Sex Incidence: Neonatal intestinal obstruction is common in males 65 cases ; 65% and females 35 cases; 35%.

Neonatal Intestinal Obstruction - Male & Female Ratio

S.NO.	TYPE	MALE	FEMALE	TOTAL
1.	PYLORIC ATRESIA/WEB		1	1
2.	DUODENAL ATRESIA/WEB	12	5	17
3.	JEJUNAL ATRESIA	8	7	15
4.	ILEAL ATRESIA	9	5	14
5.	COLON ATRESIA	1	2	3
6.	RECTAL ATRESIA	1		1
7.	MULTIPLE ATRESIA	1	1	2
8.	MALROTATION	15	7	22
9.	MUCONIUM ILEUS	9	2	11
10.	PNEUMOPERITONIUM AND PERITONITIS	5		5
11.	GASTRIC PERAFORATION		3	3
12.	ANULAR PANCREAS	1	1	2
13.	MECKLES DIVERTICULUM	1		1
14.	NEC	2	1	3
	TOTAL	65	35	100

Age Incidence : Most of the patients were 0 to 3 days-40 cases, 4 to 7 days -26 cases, 8 to 28 days-34.

AGE INCIDENCE

S.NO.	TYPE	0-3days	4-7days	8-28days	TOTAL
1.	PYLORIC ATRESIA/WEB	1			1
2.	DUODENAL ATRESIA/WEB	6	4	7	17
3.	JEJUNAL ATRESIA	9	4	2	15
4.	ILEAL ATRESIA	10	3	1	14
5.	COLON ATRESIA	2	1		3
6.	RECTAL ATRESIA		1		1
7.	MULTIPLE ATRESIA	2			2
8.	MALROTATION	2	5	15	22
9.	MUCONIUM ILEUS	5	5	1	11
10.	Pneumoperitonium and peritonitis	3	1	1	5
11.	GASTRIC PERAFORATION		1	2	3
12.	ANULAR PANCREAS		1	1	2
13.	MECKLES DIVERTICULUM			1	1
14.	NEC			3	3
	TOTAL	40	26	34	100

Neonatal Intestinal Obstruction-Common Causes & Mortality

S.NO.	TYPE	NO	Mortality
1.	PYLORIC ATRESIA/ WEB	1	
2.	DUODENAL ATRESIA/WEB	17	5
3.	JEJUNAL ATRESIA	15	5
4.	ILEAL ATRESIA	14	4
5.	COLON ATRESIA	3	
6.	RECTAL ATRESIA	1	
7.	MULTIPLE SITE ATRESIAS	2	2
8.	MALROTATION	22	3
9.	MUCONIUM ILEUS	11	3
10.	Pneumoperitonium and Peritonitis	5	2
11.	GASTRIC PERAFORATION	3	1
12.	ANULAR PANCREAS	2	
13.	MECKLES DIVERTICULUM	1	
14.	NEC	3	1
	TOTAL	100	26

Mortality:

Among 100 patients of neonatal intestinal obstruction 74 patients are survived, 26 patients expired. The mortality rate was 26%. Four deaths during resuscitation, 22 were following surgery, the highest mortality (16 deaths) was , observed in intestinal atresias. The ultimate causes of death were premature, low birth Wight, septicaemia, anastomotic dysfunction, aspiration pneumonia.

IV.Discussion

Neonatal intestinal obstruction is the most common surgical emergency in neonates less than 28 days after birth. In our series most common cause was atresias 53, followed by malrotation and mid gut valvulus 22, meconium ileus 11 and pneumoperitonium and peritonitis 5. Neonatal intestinal obstruction is most common in males 65 than females 35. There is a male predominance in our study which agrees with reports from other studies also [4,5]. Pyloric web was present in one male patient, laparotomy web resection and pylorus transversely closed. Duodenal atresia 6 cases web present, in this three cases web and central hole present, laparotomy web resection and transversely closed, these 6 cases are survived. Remaining 11 cases of duodenal atresia laparotomy, duodenoduodenostomy anastomosis done, in this 6 patients survived, 5 cases are death due to premature, low birth weight, post op leak, aspiration pneumonia and septicemia. Jejunal atresia web with central hole was present in one patient, laparotomy web resection and transversely closed and patient was survived. Jejunal type – I atresia in 7 patients, type –II atresia in one patient, type- III in 3 patients, apple peel jejunal atresia in two patients, multiple site jejunal atresia in one patient. One patient was died during resuscitation due to aspiration pneumonia, premature, low birth weight and electrolyte imbalance. Two apple peel jejunal atresia patients are jejunostomy done, the two patients are died during post operative period. Remaining cases are laparotomy, jejunio-ileal anastomosis done, in this two patients are died due to non functioning of anastomosis, anastomotic leak, septicemic shock, electrolyte imbalance. Ileal atresia and high anorectal anomaly were present in one patient, ileostomy done. Terminal ileal atresia was present in 5 patients, ileo-caecal anastomosis done, one patient post operative leak, ileostomy done. Remaining 8 ileal atresia patients, ileo-ileal anastomosis done. Four deaths due to anastomotic dysfunction, post operative leak, electrolyte imbalance and septicemia. Colon atresia was present in 3 patients, two cases are sigmoid colon atresia, colostomy done, Transverse colon atresia is present in one case, transverse colostomy done. Rectal atresia in one case, colostomy done. Multiple site atresias were present in two patients, prematurity, low birth weight, jejunal and ileal multiple site atresias, jejunostomy done, post operative death due to aspiration and septicemia. Malrotation and midgut valvulus was present in 22 cases, in this two cases are complete gangrene of bowel from duodeno jejunal junction to two third of left transverse colon, septicemia present, post operative death occurred. Remaining 20 cases, laparotomy, derotation of midgut valvulus and Ladd's procedure done, in this 19 patients were survived, one patient death due to aspiration. Meconium ileus was present in 11 patients, in this one patient died during resuscitation, two cases ileal perforation and meconium peritonitis, multiple adhesions and septicemia present, Ileostomy done, post operatively these two patients were died. Remaining 8 patients laparotomy and meconium wash out done. Pneumoperitonium and peritonitis was present in 5 patients. One patient was died during resuscitation. two cases were multiple adhesions, small bowel gangrene, peritonitis and septicemia present, one patient was died during post operative period. Remaining three patients were survived after surgery. Gastric perforation was present in 3 patients, one patient had 2/3 of gastric wall gangrene and peritonitis present, the patient died after post operative period. Remaining two patients were survived after surgery. Anular pancreas was present in two patients, laparotomy and duodeno duodenostomy done, the two patients were survived. Meckles diverticulum was present in one patient with adhesions, laparotomy adhesionolysis, wedge resection of meckles diverticulum and anastomosis done. Necrotizing enterocolitis was present in 3 patients, one patient had complete gangrene of small bowel, peritonitis and septicemia present, the patient died after post operative period. One patient had ileal perforation and peritonitis, peritoneal toilet and ileo ileal anastomosis done. The third patient was sigmoid colon gangrene, colostomy done, these two patients were survived. neonatal small bowel obstruction is good. since mid 1970 advances in neonatal care have allowed progressive reduction in mortality from a historical high of more than 90%. Many authors have reported over all survival exceeding 70% [6,7]. This is due to ability to provide long term nutritional support after surgery. In our study the mortality rate of was 26%.

V. Conclusion

Intestinal obstruction is a common neonatal surgical emergency at our centre. The incidence is higher in males than females. Abdominal distension, vomiting and constipation are the predominant presenting symptoms. Intestinal atresias are the commonest types of neonatal intestinal obstruction 53%, and malrotation and midgut valvulus 22%, Meconium ileus 11% and pneumoperitonium and peritonitis 5% are the next common types in our study. Mortality is significantly higher in those who present late >72 hours than in those presenting between 24 to 72 hours. Higher mortality was noted in patients presenting late, premature, low birth weight, jejunal atresia, multiple atresias, perforation, peritonitis and septicemic shock. Early diagnosis, surgical management and Neonatal intensive care management can reduce mortality.

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PHOTOS

Duodenal Atresia



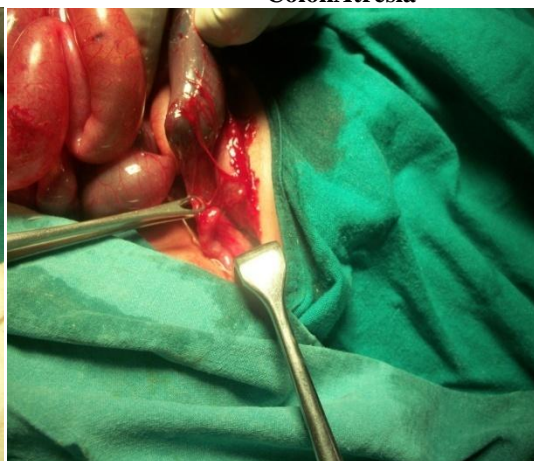
Jejunal Atresia



Ileal Atresia



Colon Atresia



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