Original Article

Causes and Clinical Presentations in Newborns with Abdominal Distention in Early Days of Life

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ABSTRACT

Objective: To detect the causes and clinical presentations in newborns with abdominal distention in early days of life.

Study Design: Cross sectional descriptive study

Place and Duration of Study: This study was conducted at the Surgical Unit and Pediatrics, Aziz Bhatti Shaheed Teaching Hospital and doctor's Hospital Gujrat from 01st July 2012 to 30th June 2022.

Materials and Methods: Newborns 1-15 days of age with abdominal distention and distended bowel loops on x-ray abdomen were selected for study. All the newborns who responded well to medical treatment within 24 hours after admission and were not suspected of having congenital abnormality of gut were excluded from the study. Moreover all the newborns who were proved of having congenital abnormality of the gut on examination or investigations were immediately included in the study without waiting for 24 hours. Informed consent, specifically from the parents or attendants was taken.

Results: Congenital malformations, like intestinal atresia, congenital megacolon, malrotation and anal atresia were seen in 20 premature newborns with abdominal distention. While thirty full-term newborns were seen with the same disorders. Sepsis was observed the number one cause of abdominal distention in the group of preterm babies 29(59.18%). Moreover sepsis was also number one cause in the group of full-term babies 28(48.27%). Regarding complaint of vomiting, it was a main symptom observed during abdominal distension, occurring in 48 (82.75%) newborns, who were full-term newborns and 35 (71.42%) premature newborns (Table 3). The most important finding on X-ray was bowel distention with or without air-fluid levels, especially in the preterm group 02 (4.08%) and 47 (95.91%) respectively. On other hand in full term newborns bowel distention with or without air-fluid level was 03 (5.17%) and 55 (94.82%) respectively (Table 3).

Conclusion: Actually we cannot ignore congenital malformations, because these may be the major cause of abdominal distension in newborns during their early life. Sepsis is very common in our set up, that's why it is the single disease, which is the most frequently associated with abdominal distention, especially in preterm babies. Vomiting is observed as a main accompanying symptom of abdominal distension, especially in newborns during their early life. Regarding X-ray manifestations, it seems to be more severe in preterm newborns than in full term newborns. If we recognize the problem early and start the treatment immediately, it may give excellent prognosis.

Key Words: Abdominal distention in Newborn

Citation of article: Zahid MM, Mehmood S, Tariq A, Ahmed K, Arshad I, Naz T. Causes and Clinical Presentations in Newborns with Abdominal Distention in Early Days of Life. Med Forum 2023;34(7):17-20. doi:10.60110/medforum.340705.

INTRODUCTION

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Received: February, 2023
Accepted: April, 2023
Printed: July, 2023

Neonatal intestinal obstruction is common emergency in surgical department in early neonatal days of life.[1] Multiple conditions may lead to abdominal neonatal intestinal obstruction, moreover it always has the best outcome, but the outcome depends on early diagnosis and appropriate surgical or medical management.[2] The clinical presentations of bowel obstruction in early neonate may vary.[3] It may range from very few signs and symptoms or it may be very severe and massive abdominal distension which may lead to systemic signs and symptoms in newborn.[3] It is seen that the newborns with unrecognized gut obstruction become sick very rapidly than adults and older children.[4] if we consider morbidity and mortality of cases of intestinal obstruction, it is low now a days due to the availability of the best treatment and intensive care management in the hospital.[4] As outcome is considered, it is mainly

dependent upon the coexistence of other congenital anomalies, any delay in diagnosis and management or any other medical problem which coexists with primary diagnosis.[4,5]

Regarding anorectal malformations, which are the birth defects in which the anus or rectum may be malformed. Malformations of anus or rectum are congenital anomalies in human which ranges from minor problems to very complex problems.[6-8] The cause of malformations of anus or rectum are still not clear but the genetic basis of all these anomalies is extremely complex for understanding because of their anatomical variability. In 8% of patients, if we discuss genetically, these are clearly associated with anorectal malformations.[8] The only association with anorectal Malformation in Currarino syndrome represent in which the identified gene is HLXB9.[8,9]

Another problem necrotizing enterocolitis, which usually develops 2 to 3 days after birth of the newborn and 90% develops within the first 10 days of life.[7] Gestational age also affects its incidence and 90% cases occur in neonates born before 37 weeks of gestation. The overall incidence of necrotizing enterocolitis is 1 in 1000 births but in low birth weight infants it is very high.[8]

Clinical presentations of necrotizing enterocolitis is often non-specific. It may include poor feeding, biliary vomiting, and distension of the abdomen, bloody stools, severe diarrhea, respiratory distress and many features of sepsis.

Prematurity, congenital heart disease, perinatal asphyxia and decreased umbilical flow in utero are the risk factors of development of enterocolitis.

Supine abdominal x-ray is necessary for diagnosis. If there is strong suspicion of necrotizing enterocolitis or there is any suspected finding on x-ray on supine position then another cross table lateral or left lateral decubitus film may be necessary for proper diagnosis. There may observe dilated gut loops and seen often in asymmetrical distribution), loss of the normally found polygonal gas shape, edema of the gut wall with thumb printing, intramural gas, pneumo-peritoneum secondary to perforation of gut and gas around the portal vein.[6]

MATERIALS AND METHODS

Study was conducted in Surgical unit and pediatrics department of Aziz Bhatti Shaheed Teaching Hospital and doctor's Hospital Gujrat Pakistan. Duration of study was from 01-07-2012 to 30-06-2022.

Newborns 1-15 days of age with abdominal distention and distended bowel loops on x-ray abdomen were selected for study. All the newborns who responded well to medical treatment within 24 hours after admission and were not suspected of having congenital abnormality of gut were excluded from the study. Moreover all the newborns who were proved of having congenital abnormality of the gut on examination or investigations were immediately included in the study without waiting for 24 hours.

Informed consent, specifically from the parents or attendants was taken. The study was beneficial for the patients. All the basic demographic information, including name, age, gender and address was noted. History of patient about the illness was inquired and symptoms, their severity and duration was emphasized.

Daily report was taken and important required investigations, like CBC, serum studies, blood culture, X-ray abdomen and ultrasound abdomen was performed and treatment was started according to the requirement of the patient.

After the final diagnosis of the patient, medical or surgical treatment was planned. All the treatment was given in ward under strict supervision of the consultant; surgery was performed, whenever it was needed. The response of the medical and surgical treatment was observed, it was on clinical improvement of the patient and investigations were done again, whenever required. Descriptive statistics, like proportion or mean for age, gender, and presenting complaints before hospitalization was calculated. An intention to treat analysis, especially for symptoms at presentation and diagnosis in all the cases was performed.

RESULTS

Congenital malformations, like intestinal atresia, congenital megacolon, malrotation and anal atresia were seen in 20 premature newborns with abdominal distention. While thirty full-term newborns were seen with the same disorders (Table 2). Sepsis was observed the number one cause of abdominal distention in the group of preterm babies 29(59.18%). Moreover sepsis was also number one cause in the group of full-term babies 28(48.27%).(Table 2).

Table No. 1: Clinical Presentation and X-Ray, Abdominal distention, Vomiting, Fever, X-ray with air fluid level, X-ray without air fluid level.

Clinical presentation and X-ray	Full term n=58	Percentage n=58	Preterm n=49	Percentage n=49
Abdominal distention	58	100%	49	100%
Vomiting	48	82.75%	35	71.42%
Fever	24	41.37%	21	42.85%
X-ray with air fluid level	03	5.17%	02	4.08%
X-ray without air fluid level	55	94.82%	47	95.91%

Table No. 2: Etiology.

Etiology		Full term n=58	Percentage	Preterm n=49	Percentage
Congenital malformations of gastrointestinal tract	anal atresia	19	32.73%	12	24.48%
	congenital megacolon	01	1.7%	0	00%
	intestinal atresia	9	15.50%	8	16.32%
	malrotation	01	1.7%	0	0%
Sepsis		28	48.27%	29	59.18%
Total		58	100%	49	100%

Regarding complaint of vomiting, it was a main symptom observed during abdominal distension, occurring in 48 (82.75%) newborns, who were full-term newborns and 35 (71.42%) premature newborns (TABLE I). The most important finding on X-ray was bowel distention with or without air-fluid levels, especially in the preterm group 02 (4.08%) and 47 (95.91%) respectively. On other hand in full term newborns bowel distention with or without air-fluid level was 03 (5.17%) and 55 (94.82%) respectively (Table 1).

DISCUSSION

Abdominal distention is commonly seen in newborn babies, it must be diagnosed as early as possible and if it is not diagnosed earlier, it can be life-threatening. Few studies are available which shows early identification of the etiology of this abdominal distention in newborn babies, which may lead to serious outcome. This study was conducted to analyze the clinical characteristics of newborn babies with abdominal distention in early days of life, aiming at identifying the underlying etiologic causes. Our study tells us which etiology is more common in our hospital.

According to Leape and Ramenofsky in a study, there are a lot of forms of anorectal malformations but the imperforate anus is most common malformation. Other variants may include Anterior ectopic anus. In our study anal atresia is most commonly seen congenital malformation. It is detected 19(32.73%) in full term and 12(24.48%) in premature infants. (Table 4). In a study in 2007 according to Devos and Blickman, 90% cases of sepsis and necrotizing enterocolitis occurs in premature infants.[6]

In our study out of 49 premature infants, 29(59.18%) premature infants with abdominal distention were diagnosed as sepsis (TABLE IV). In Japan, Suita and Taguchi in 2005 studied that Hirschsprung disease occurs at a rate of about 1 in 5,000 births (20 per 100,000)[7]. Hirschsprung disease was not detected in any neonate in our study. It may be due to small sample size. This study may be helpful in future but for the detection of more accurate results more studies with large sample size is required.

CONCLUSION

Actually we cannot ignore congenital malformations, because these may be the major cause of abdominal distension in newborns during their early life. Sepsis is very common in our set up, that's why it is the single disease, which is the most frequently associated with abdominal distention, especially in preterm babies. Vomiting is observed as a main accompanying symptom of abdominal distension, especially in newborns during their early life. Regarding X-ray manifestations, it seems to be more severe in preterm newborns than in full term newborns. If we recognize the problem early and start the treatment immediately, it may give excellent prognosis.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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