Neonatal intestinal obstruction: A case of jejunal and colonic atresia with micro colon

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ABSTRACT

Congenital intestinal atresia is a common cause of neonatal intestinal obstruction. Intestinal obstruction from jejunal and colonic atresia is rare. The etiology of intestinal atresia is mainly from abnormal morphogenesis; mainly, from an intra-uterine vascular insult. This case underscored the value of imaging to allow for early detection, determine the extent of the lesion possible associated anomalies and come up with possible differential diagnoses. A 2-day-old baby presented with clinical signs of lower intestinal obstruction suspected to be hischsprungs disease. Barium enema, however, showed features of jejunal and colonic atresia with extensive micro colon, which were confirmed and corrected at surgery.

Key words: Barium enema; colonic atresia; intestinal obstruction; malformation; micro colon

Introduction

Congenital intestinal atresia is a malformation is the narrowing, obliteration, or absence of the intestine due to insufficient or lack of blood supply in utero.[1] Intestinal atresia is a common cause of neonatal intestinal obstruction in developed countries and ranks the fourth most common cause of neonatal intestinal obstruction in Zaria, Northern Nigeria after anorectal malformation, Hirschprung disease and strangulated inguinal hernia.[2] In an epidemiologic review of intestinal atresia by Forrester Merz,[3] small intestinal atresia or stenosis rates were 2.9 per 10,000 live births. Furthermore, combination of jejunal and colonic atresia is rather uncommon; with incidence of 5-15% of all intestinal atresias.[4] According to 25 year review of 277 cases of neonatal intestinal atresia by Laura *et al*.,[5] colonic atresia constitutes 8%. The etiology of intestinal atresia is thought to result from abnormal morphogenesis; mainly, from an intra-uterine vascular insult.[4,5]

The level of obstruction and severity determines the clinical presentation. Approximately, 95% of intestinal obstructions diagnosed in the first two weeks of life are due to atresia andor stenosis of a small intestine.[6] Up to 75% of colonic atresias are found proximal to splenic flexure usually in the ascending colon with significant amount of colon missing in most infants.[4] This is commonly associated with other anomalies, which include abdominal wall defects, abnormality of the genitourinary tract, anal atresia, imperforate anus, Hirschprung disease, omphalocoele, absent hand, cleft lip and palate, facial asymmetry and bilateral optic nerve atrophy.[4]

Neonatal intestinal obstruction depending on the site, presents with increasing abdominal distention, vomiting, and constipation. Imaging may be the only clue to the diagnosis, which is necessary for early detection, determination of the extent of the lesion and possible associated lesions. It is also useful in planning treatment options and follow-up.[5] Combination of jejunal and colonic atresia is uncommon. Hence, we present a case of a 2-day-old infant with additional features of extensive micro colon.

Case Report

A 2-day-old boy presented with progressive abdominal distension, bilious vomiting and no passage of meconium since birth. He was a product of full term pregnancy; delivered by 24-year-old Para 4 + 0. There was poor antenatal care at a rural hospital, without prenatal ultrasound services. The labor and delivery (though unsupervised) were uncomplicated and the baby cried immediately after birth but Apgar score could

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not be ascertained. Upon a suspicion of neonatal intestinal obstruction, he was referred to Aminu Kano teaching hospital from the rural hospital, for further management. In addition, the presenting symptoms worsened within the last 6 h prior to presentation.

On examination, the baby weighed 2.67 kg and he was not pale, anicteric and not dehydrated. There was no history of fever or breathing difficulty. The abdomen was grossly distended with visible peristaltic activity. However, there was no mass or palpable organomegaly. Rectal examination did not reveal any meconium stain on the gloved finger. Chest, cardiovascular and neurological examinations were unremarkable; except for the mild dyspnoea (respiratory rate of 45 cycles per min).

A provisional diagnosis of neonatal intestinal obstruction was made; which necessitated abdominal radiograph and limited barium enema. On a plain abdominal radiograph, there was gaseous distention of the small bowel loops, causing gross abdominal distention with bulging of the flanks. There was no evidence of presence of gas in the rectum or freely in the peritoneal cavity. No radiographic evidence of peritoneal calcification seen. The outlined bones and joint spaces were within normal limits [Figure 1].

Following introduction of diluted Barium suspension via the rectum, the entire length of the colon was outlined up to the caecum. The colon showed a small caliber in its entirety, with focal areas of narrowing in the mid transverse colon. Mild prestenotic dilatation is noted close to the hepatic flexure. There was reflux of contrast medium into the terminal ileum; with the column of barium seen to be arrested in the distal jejunum. No evidence of herniation is noted [Figure 2]. Therefore, a radiographic diagnosis of colonic atresia with associated micro colon was made to rule out hirschsprung disease.

The results of complete blood count, renal function test and chest radiography were within normal limits.

The patient had an exploratory laparotomy on the second day of admission, which revealed atretic segments in the jejunum and transverse colon through the splenic flexure to sigmoid colon. The atretic segment was resected and colo-colic anastomosis was done. Histology of resected segment of colon showed the presence of ganglion cells, thereby excluding the possibility of Hirschsprung's disease, an important differential diagnosis. There was no immediate post operative complications and on follow-up for 6 weeks.

Discussion

Intestinal atresia is an important cause of neonatal intestinal obstruction as illustrated by this case.[1,5] Four main types of intestinal atresia have been described: Type I is characterized

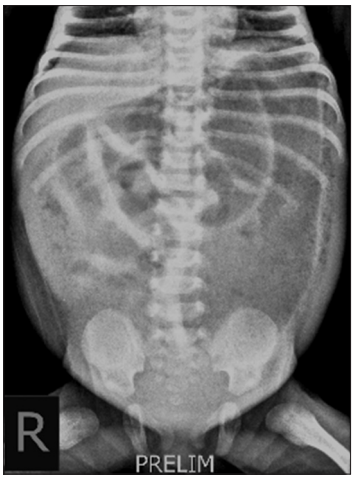

Figure 1: Plain abdominal radiograph, showing gaseous dilatation of the small bowel loops, causing gross abdominal distention with bulging of the flanks and gasslessness in the pelvis

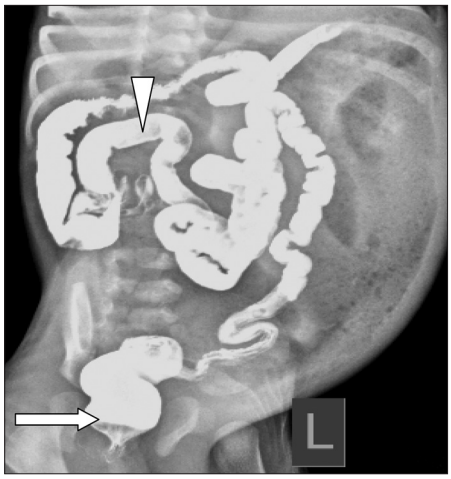

Figure 2: Dilute barium enema, showing extensive colonic atresia with luminal narrowing of the mid transverse colon (arrow head). Note the preservation of the rectal caliber (arrow)

by a thin diaphragm that occludes the lumen. In type II, two blind ends are connected with a fibrous cord of atretic bowel. In type IIIA, two blind ends terminate with a V-shaped mesenteric defect; this is the most common type. Type IIIB, apple-peel or Christmas-tree atresia, involves a large, V-shaped mesenteric defect in which the blind-ended bowel distal to the atresia is wrapped around its collateral blood supply. Type IV is defined as multiple atresia[4,6] as seen in the present case.

Congenital anomalies of the gastrointestinal tract are a significant cause of morbidity in children and, less frequently, in adults. Neonates with complete high intestinal obstruction do not usually require further radiologic evaluation following plain radiographs, whereas those with complete low obstruction should undergo a contrast enema examination.[7] An upper gastrointestinal series must be performed in all patients with incomplete intestinal obstruction because management is different in each case. In this patient,

however, it was not done and definitive diagnosis was made at surgery.

Ultrasonography (US) plays a role in imaging intestinal obstruction as it may be used to differentiate between small bowel obstruction and colonic obstruction. In addition, US is useful in identifying meconium ileus, meconium peritonitis and also in the diagnosis of enteric duplication cysts.[4,7]

In malrotation and anorectal anomalies, computed tomography and magnetic resonance (MR) imaging can provide good anatomical detail and added diagnostic specificity. At MR imaging, the intracystic fluid has heterogeneous signal intensity on T1-weighted images and homogeneous high signal intensity on T2-weighted images.[8] Familiarity with these gastrointestinal abnormalities is essential for correct diagnosis and appropriate management.

Conclusion

A case of jejunal and colonic atresia with microcolon wrongly diagnosed as hischsprungs disease on clinical examination has been presented. Plain radiograph and barium enema were done, which showed the presence of micro colon and atresia which were confirmed at surgery. The relevant literature on imaging was also reviewed.

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