Case 1219

Meconium ileus

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Section: Paediatric radiology
Imaging Technique: Digital radiography
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Case Type: Clinical Cases
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Patient: 1 days, male

Clinical History:

Neonate with abdominal distension, bile-stained vomit and failure to pass meconium.

Imaging Findings:

Neonate born at term in good condition and with no complications. A few hours after birth the patient developed abdominal distension. On day one bilious vomiting occurred and the patient failed to pass meconium. The anus was normal. There was no family history of cystic fibrosis. The plain abdominal radiograph showed numerous dilated air-filled bowel loops consistent with intestinal obstruction. A diagnostic enema was performed with a low osmolar contrast medium. The examination showed microcolon and contrast surrounded inspissated pellets of meconium in the terminal ileum and the proximally dilated small bowel. The diagnosis of meconium ileus was confirmed and, therefore, a therapeutic contrast enema was performed. Gastrografin at 1:1 dilution with sterile water was administered per rectum and refluxed into the dilated small bowel. The child then spontaneously passed copious quantities of sticky, thick meconium and the obstruction was relieved. A diagnosis of cystic fibrosis was confirmed in this case.

Discussion:

Meconium ileus accounts for about 30% of cases of intestinal obstruction in neonates. The obstruction is caused by impaction of thick, tenacious meconium in the distal small bowel. Although meconium ileus has been described in a small number of neonates without cystic fibrosis, it is most commonly related to cystic fibrosis. Meconium ileus is the presenting feature in 10–15% of patients with cystic fibrosis. Meconium ileus is generally classified as simple or complicated, with complications occurring in up to 50% of cases. Complications include ileal atresia or stenosis, volvulus, and, if perforation occurs, meconium peritonitis. Clinically, neonates with simple meconium ileus often appear normal in the first day of life. As the small bowel fills with air and food, the abdomen becomes distended. Clear and then bile-stained emesis occurs and no meconium is passed in the first 24 to 48 hours. In complicated cases, symptoms generally develop within the first 24 hours of life. The presence of fetal ascites and intra-abdominal calcification on ultrasound are indicative of meconium peritonitis resulting from antenatal bowel perforation. In most cases of suspected intestinal obstruction, the clinical findings combined with plain abdominal radiographs and contrast enema examination yield the diagnosis. The plain radiographs demonstrate dilated air-filled loops of bowel and a few air-fluid levels, and meconium mixed with air, which give rise to a ground glass or soap bubble appearance in the right lower abdomen. This sign, however, is not pathognomonic of meconium ileus. Peritoneal calcification may occur in cases with in utero perforation. A diagnostic enema is frequently required, before which the child must be metabolically stabilised. Meconium ileus is characterised by a functional microcolon with inspissated pellets within the terminal ileum and dilatation proximally. The contrast enema usually differentiates meconium ileus from other causes of distal intestinal obstruction such as meconium plug syndrome, small left colon syndrome, colon atresia and Hirschsprung’s disease. Functional microcolon is seen in both meconium ileus and ileal...
atresia. Reflux of contrast medium into the terminal ileum indicates meconium ileus. In ileal atresia contrast medium does not reflux into the proximal dilated "atretic" bowel. Treatment of simple meconium ileus is nonoperative; a therapeutic contrast enema is administered. Gastrografin at 1:1 dilution with sterile water is administered per rectum under fluoroscopy and gently infused into the terminal ileum to mix with the inspissated meconium. The obstruction may not be relieved on the first attempt and, if the baby is stable, the procedure may be repeated. In successful cases semi-liquid meconium is usually passed during the first 12 hours after the enema. Enterotomy with irrigation is currently the treatment of choice for cases in which two to three therapeutic enemas fail to relieve the obstruction. All neonates with complicated meconium ileus and those who develop complications such as perforation during therapeutic enema require operative intervention including resection, intestinal anastomosis and ileostomy. If a diagnosis of cystic fibrosis is established, treatment of the gastrointestinal manifestations focuses on enzyme replacement and optimising the child's nutritional status.

**Differential Diagnosis List:** Meconium ileus

**Final Diagnosis:** Meconium ileus

**References:**


Ziegler MM. Meconium ileus. Curr Probl Surg 1994 Sep;31(9):731-77. (PMID: [8062591])

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**Figure 1**

**Description:** Supine abdominal radiograph demonstrates numerous dilated air-filled loops of bowel.

**Origin:**
Description: Scout film (pre-contrast) shows very distended bowel. Origin:
**Figure 3**

*Description:* Contrast enema with low osmolar contrast agent demonstrates a functional microcolon and distensible rectum. *Origin:*
Description: High osmolar contrast enema showing microcolon and reflux into dilated small bowel.
Origin:
Description: Sticky meconium pellets passed by the patient after removal of the contrast enema catheter. Origin: