Colon-cut-off and false positive small-bowel feces sign in acute pancreatitis

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Patient: 36 years, female

Clinical History:

A 36 year old female, a follow up case of acute pancreatitis, presented with a 2 weeks history of increasing abdominal pain and fever.

Imaging Findings:

This lady who was treated for acute pancreatitis and subsequently discharged from the hospital about 4 weeks earlier presented to the Gastroenterologist complaining of increasing abdominal pain and fever. She also complained of progressive constipation since last 2 weeks. She had last passed stools about 3 days back. Her haematological examination showed an increased total leukocyte count and ESR. US of the abdomen was non-contributory due to gas shadowing. A CT scan revealed changes of pancreatitis with associated pre-pancreatic abscess and the classical "Colon cutoff sign". Large bowel proximal to the splenic flexure was markedly dilated. There was associated dilatation of the small bowel noted with patent ileo-cecal valve. The dilated small bowel loops owing to stasis and delayed intestinal transit demonstrated pooling of undigested particulate food and mottled air collections mimicking the appearance of faeces in the large bowel.

Discussion:

We present a case of necrotising pancreatitis, which presented with progressive constipation. CT scout film demonstrated the classical colon cut-off sign. Axial CT sections demonstrated peri-pancreatic abscess and extension of the inflammatory process into the phrenicocolic ligament with resultant narrowing of the colon at the splenic flexure. The large bowel proximal to it was dilated along-with dilatation of the ileal loops secondary to an incompetent ileocecal valve. The mottled bowel contents and air collections within the small bowel mimicked the Small bowel faeces sign.

The colon cut-off sign refers to the abrupt termination of gas within the proximal colon at the level of splenic flexure. It was originally described on plain abdominal radiographs in patients with acute pancreatitis. Similar findings can also be seen on CT, and barium enema. It is thought to be a sequel of extension of inflammatory exudates from acute pancreatitis into the phrenicocolic ligament. The phrenicocolic ligament (sustentaculum linealis) is a peritoneal fold that extends from the splenic flexure of colon to the left hemidiaphragm. Involvement of this phrenicocolic ligament by the inflammatory exudates of pancreatitis can result in spasm and/or mechanical narrowing of the colon at the splenic flexure with resultant upstream colonic dilatation. The effect is further accentuated by focal adynamic ileus of the intra-peritoneal transverse colon from the same inflammatory mediators. Although pancreatitis
is considered the most common cause of the colon cut-off sign, it is a non-specific imaging finding. This may also be seen in splenic flexure narrowing secondary to spread of pancreatic carcinoma, gastric carcinoma, abdominal aortic aneurysm rupture, and post-pancreatitis stricture. Cross sectional imaging such as CT or MR imaging aids in confirming the diagnosis and helps in excluding other conditions.

CT small bowel feces sign (SBFS) was first described by Mayo-Smith et al in 1997. It is defined as presence of particulate material within the dilated small bowel loops that simulates the appearance of feces. It is supposedly caused by stasis and delayed intestinal transit resulting in accumulation of undigested food particles within the small bowel mimicking the appearance of feces. Bacterial overgrowth and increased water absorption secondary to stasis are also thought to be contributory. CT small bowel feces sign has been considered an indicator of small bowel obstruction and has shown a high specificity for sub-acute or low-grade obstruction. It is believed to result from progressive slowing of intestinal transit than an abrupt complete obstruction. It is a useful CT sign that helps identifying the transition zone. It tends to be most prominent proximal to the zone of transition hence it aids in recognizing the exact site and cause of obstruction. A false positive SBFS i.e. mottled contents with air collections mimicking the feces sign may also be seen secondary to reflux of fecal material across an incompetent ileocecal valve, in patients with rapid jejunostomy tube feedings, in cystic fibrosis, infectious or metabolic bowel diseases.

**Differential Diagnosis List:** Colon-cut-off & small-bowel-feces sign in a case of acute pancreatitis

**Final Diagnosis:** Colon-cut-off & small-bowel-feces sign in a case of acute pancreatitis

**References:**

Description: CT scanogram shows abrupt cutoff of colonic gas column at the splenic flexure. Origin:
Description: There is abrupt cutoff of colonic gas column at the splenic flexure (arrow). The large bowel proximally is dilated whereas the colon distal to this point is decompressed. Small bowel dilatation can also be seen. Origin:
Description: CT scan shows findings of pancreatitis with extension of the inflammatory process into the phrenicocolic ligament which results in narrowing at the splenic flexure. Origin:
Description: CT scan shows findings of pancreatitis with extension of the inflammatory process into the phrenicocolic ligament which results in narrowing at the splenic flexure. Origin:
Description: There is abrupt narrowing at the splenic flexure due to inflammatory process extending into the phrenicocolic ligament. The colon distal to this point is decompressed. Origin:
Description: There is associated pre-and peripancreatic abscess. There is also the extension of exudate into the anterior pararenal space. Origin:
Figure 3

Description: The ileo-cecal valve is patent with associated small bowel dilatation. Origin:
Description: The dilated small bowel loops owing to stasis and delayed intestinal transit demonstrate pooling of undigested particulate food material within the lumen. Origin:
Description: The particulate material and mottled air lucency within the dilated small bowel loops simulates the appearance of feces. Origin:
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