

Urinary excretion of orally ingested contrast medium in a patient with intestinal ischemia

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Section: Abdominal imaging

Imaging Technique: CT

Case Type: Clinical Cases

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Patient: 18 years, male

Clinical History:

The patient was admitted on urgent basis, with a diagnosis of small bowel obstruction. During small bowel series urinary excretion of orally ingested contrast medium was observed.

Imaging Findings:

This patient was admitted on urgent basis, with a diagnosis of small bowel obstruction. During laparotomy, a strangulated and ischemic small bowel - due to malrotation around the axis of a firm adhesion – was discovered. Extended resection of the small bowel – leaving 1m of jejunum – plus right colectomy was performed. Fifteen days later he was referred for small bowel series in the setting of ileus. 500ml of diluted gastrografin was administered. Study revealed non-dilated bowel loops with abnormal mucosal pattern. Fifteen minutes after contrast medium (CM) ingestion CM was excreted in the urinary tract. Shortly thereafter abdominal CT scanning was performed for suspected bowel perforation. The study did not show signs of intestinal perforation. Bowel wall thickening and ascites were observed. Two months following his admission the patient developed an enterocutaneous fistula. On re-operation a short segment of small bowel was excised. The specimen showed pathological changes consistent with subacute ischemia. No necrotic bowel was found. The patient's recovery was slow, and finally he was discharged to be followed on an outpatient basis.

Discussion:

Abnormal excretion of orally ingested CM in the urinary tract is a well-known sign indicative of gastrointestinal perforation. This has been attributed to the extensive absorption of CM by the peritoneal surfaces that takes place in case of leakage. In addition, this phenomenon has been reported to occur –rarely- in bowel diseases such as lymphoma, radiation enteritis, inflammatory bowel diseases (Crohn's disease, colitis) and bowel obstruction. An underlying process is believed to be increased permeability of the wall. In our case, a major portion of the bowel suffered from nontransmural ischemic injury as it was shown on surgical inspection and proven on pathology. Intestinal ischemia produces a broad spectrum of wall injury ranging from completely reversible functional alterations to transmural necrosis of segments or the entire bowel. In the early the bowel wall exhibits hemorrhage and edema. If ischemia persists mucosa sloughing and necrosis take place. At this stage, as the mucosa loses its integrity, the CM is able to enter the capillaries of the bowel wall. Eventually mucosa may reconstitute itself from adjacent viable epithelium and lamina propria leading to complete resolution. Although rarely encountered, in the appropriate clinical setting, the above described sign should be considered as indicative of intestinal ischemia.

Differential Diagnosis List: intestinal ischemia

Final Diagnosis: intestinal ischemia

References:

Apter S et al: Urinary excretion of orally ingested gastrografin on CT.

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Mitsudo S, Brandt JL: Pathology of intestinal ischemia. Surg Clin North Am (1992); 72: 43-63. (PMID: [1731389](#))

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Figure 1

a



Description: 15 minutes after contrast ingestion reveals CM in both pelvicalyceal systems and ureters. Abnormal small bowel loops, segmentally dilated are noted at the upper and mid-left abdomen with gradual progression to more normal-appearing loops on the right. Notice thickening of the mucosal folds causing scalloping of the bowel contour in the affected area. **Origin:**

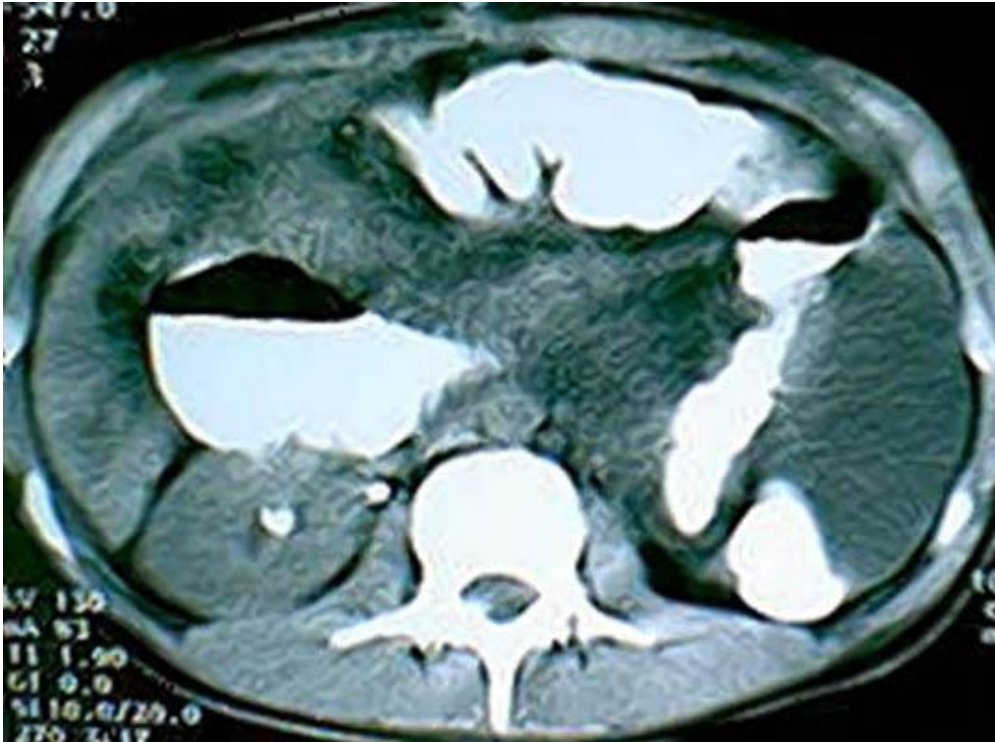
Figure 2

a



Description: Upper abdomen we notice extensive ascites and excretion of CM in the pelvicalyceal system bilaterally. **Origin:**

b



Description: At the level of duodenum junction dilatation of the third part of the duodenum, mild mucosal edema at the junction and formless rigid loop on the left are observed. **Origin:**

c



Description: Lower abdomen; abnormal bowel loops are shown with effacement of the mucosal pattern. **Origin:**