Case 16268

An exceptional cause of blood loss following colonic resection
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Section: Abdominal imaging
Area of Interest: Colon
Procedure: Endoscopy
Procedure: Diagnostic procedure
Imaging Technique: Image manipulation /
Reconstruction
Imaging Technique: MR
Special Focus: Inflammation Case Type: Clinical Cases
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Patient: 65 years, male

Clinical History:

Eight months after right hemicolecctomy with ileocolic anastomosis for pT3N1aG3 (stage IIIB) adenocarcinoma of right colonic flexure and initiation of FOLFOX chemotherapy, the patient suffered from progressive fatigue without abnormal physical findings. Laboratory tests diagnosed marked iron-deficiency anaemia (8.8 g/dl haemoglobin), positive faecal blood test (FOBT).

Imaging Findings:

Endoscopy showed ulcerations with fragile mucosa at the ileocolic anastomosis and preanastomotic ileal mucosa. Body CT (not shown) excluded significant abnormalities. Chemotherapy was stopped after persistently positive FOBT and worsening anaemia (7.9 g/dl). With normal C-reactive protein, elevated faecal calprotectin (332 mcg/g, normal range < 50) indicated bowel inflammation. Three months later, repeated endoscopy (Fig.1) confirmed mucosal erythema, oedema and multiple ulcerations at the ileocolonic anastomosis, without active bleeding; histology of forceps biopsy revealed minimal architectural distortions, Paneth cells metaplasia, unspecific oedema and focal linfoplasmacellular infiltrate of the lamina propria. Requested to depict features of the ulcerated anastomosis, MR-enterography (Fig.2) showed patent ileocolonic anastomosis with mild thickening (5-6 mm) with signs of mural oedema on fat suppressed T2-weighted and diffusion-weighted imaging. No extramural inflammation, solid masses or fluid collections were seen surrounding the anastomosis. After receiving blood transfusions, haemoglobin increased (12.2 g/dl) and the patient could restart scheduled chemotherapy.

Discussion:

The development of anastomotic ulcer (AU) represents an uncommon late complication following ileocolonic resection. In paediatric populations, AU has been reported to occur in up to 8% of operated patients on average 6.3 years after surgical treatment of necrotizing enterocolitis and intussusception [1-4]. Compared to children, AU is less known in adults. Albeit Weinstock et al. found endoscopical evidence of AU in 2.5% of operated patients, some other series reported a 0.8% incidence in patients aged from 24 to 76 years after a
variable interval from surgery (from a few months to 28 years) for either carcinoma or chronic inflammatory bowel diseases (IBD). All patients had ileocolonic anastomoses with lost ileocecal valve, most usually fashioned side-to-side. Pathogenesis remains poorly understood and may involve: a) mucosal damage from biliary acids and pancreatic enzymes; b) exposure of ileal mucosa to colonic microenvironment and bacterial overgrowth; c) ischaemia and d) foreign body reaction to suture or staple. The usual manifestations include chronic occult blood loss, iron-deficiency anaemia, sometimes diarrhoea or overt rectal bleeding. The diagnosis is typically made endoscopically, and biopies show unspecific chronic inflammation without granulomas and crypt abscesses [5-7]. In patients with endoscopic evidence of AU, the role of cross-sectional imaging mostly lies in excluding recurrent IBD or tumour. To investigate obscure gastrointestinal bleeding, CT-enteroclysis or multiphase CT-enterography have been consistently show to have comparable or higher accuracy to capsule endoscopy in the diagnosis of small bowel abnormalities such as ulcers, vascular malformations and tumours. On CT, AU may appear as focal irregularities, unspecific intraluminal projections or mural thickening at anastomotic sites. Particularly in young and pediatric patients the less invasive MR-enterography is increasingly performed to assess the intestine without administering ionising radiation. Borrowing from experience with Crohn’s disease, MR-enterography provides multiparametric information on the bowel wall features and extramural disease. In patients with consistent history, radiologists may therefore indicate possible AU when faced with localised anastomotic thickening without extramural mass or other features suggesting recurrent IBD or cancer. Conversely, evidence of anastomotic obstruction with upstream dilatation should prompt searching for either tumour or fibrosis [8-10].

To manage AU, nonsteroidal anti-inflammatory medications should be withdrawn. Sporadic cases have been successfully treated with ranitidine or mesalazine. In nearly 50% of cases, surgical revision of the affected anastomosis including ulcer resection results in recurrence and persistent bleeding [3, 6].

Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Bleeding ileo-colonic anastomotic ulcer after chemotherapy, Anastomotic tumour recurrence, Fibro-cicatrical anastomotic stricture, Crohn’s disease

**Final Diagnosis:** Bleeding ileo-colonic anastomotic ulcer after chemotherapy

**References:**


Tonolini M, Ippolito S (2018) Imaging the operated colon using water-enema multidetector CT, with emphasis on surgical anastomoses. Insights Imaging 9:413-423 (PMID:29633171)
**Figure 1**

**a**

**Description:** Endoscopy showed patent ileocolonic anastomosis with irregular contour, multiple wide ulcerations with mucosal erythema and oedema. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)

**b**

**Description:** Endoscopy showed patent ileocolonic anastomosis with irregular contour, multiple wide ulcerations with mucosal erythema and oedema. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: Coronal T2-weighted images showed patent ileocolonic anastomosis (arrowhead) without upstream ileal dilatation and filling of the remnant transverse colon (*). No visible perianastomotic extramural inflammation, solid masses or fluid collections. Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: Axial T2-weighted (b) images showed mild thickening (5-6 mm) of the ileocolonic anastomosis (arrowheads) with signs of mural oedema using fat suppression (c). No visible perianastomotic extramural inflammation, solid masses or fluid collections. Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**d**

**Description:** High b value diffusion-weighted images showed visual hyperintensity consistent with inflammation at the ileocolonic anastomosis wall (arrowhead). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)

**e**

**Description:** After intravenous gadolinium contrast, fat-suppressed T1-weighted images (e, f) showed moderate, non-stratified enhancement at the ileocolonic anastomosis (arrowheads). No visible perianastomotic extramural inflammation, solid masses or fluid collections. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: After intravenous gadolinium contrast, fat-suppressed T1-weighted images (e, f) showed moderate, non-stratified enhancement at the ileocolonic anastomosis (arrowheads). No visible perianastomotic extramural inflammation, solid masses or fluid collections. Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)