CASE REPORT

Solitary rectal ulcer syndrome mimicking rectal neoplasm on MRI

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ABSTRACT. Solitary rectal ulcer syndrome (SRUS) is a rare condition that typically affects young adults and describes a spectrum of clinicopathological abnormalities. The diagnosis of SRUS is usually made on the basis of a combination of presenting symptoms and endoscopic and histological appearances. Characteristic radiological appearances have been described on transrectal and endoanal ultrasound, defecating proctography and barium enema. The radiological appearance of solitary rectal ulcer on MRI has not been previously described. MRI appearance of thickened ulcerated mucosa in the anterior rectal wall are non-specific and was indistinguishable from a malignant process. However, given that solitary rectal ulcer has a pre-disposition to occur in the anterior rectal wall, the presence on MRI of thickened rectal mucosa in this location could suggest solitary rectal ulcer in the correct clinical context.

Received 23 July 2009
Accepted 22 October 2009

DOI: 10.1259/bjr/24752209

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Case report

A 48-year-old man presented with a 6 week history of reduced bowel action and weight loss with episodes of rectal bleeding. Abdominal examination was unremarkable. Digital rectal examination identified a possible polypoid lesion approximately 5 cm from the anal margin. Colonoscopy revealed a broad-based lesion with an irregular surface measuring approximately 4 cm in diameter (Figure 1). This lesion was reported as a probable malignant ulcerating polyp; T_1 and T_2 weighted MRI of the rectum was performed for further evaluation.

MRI demonstrated an area of focal thickening in the anterior rectal wall with a central area of ulceration confined to the mucosa. The muscularis propria was intact with no enlarged regional lymph nodes or fatty stranding (Figure 2). On the basis of these MRI features and the clinical history, a diagnosis of ulcerating rectal lesion with provisional staging of T1N0 was made. Carcinoembryonic antigen (CEA) levels were within normal limits at <2.

Histological analysis of biopsy specimens taken at the time of colonoscopy revealed features consistent with solitary rectal ulcer syndrome (SRUS): distortion of the crypts, splaying of the smooth muscle fibres of the muscularis mucosa, foci of hyperplasia in the crypts and the presence of muscle fibres and fibroblastic cells in the rectal mucosa; immunohistological staining excluded a neoplasm (Figure 3).

On further questioning, the patient reported a history of obstructive defecation with digitation. Defecating proctography was performed. Digital rectal examination before the procedure revealed a fleshy mass at the 12 o'clock position. Rapid rectal evacuation was demonstrated with a significant small bowel enterocele and a degree of external rectal prolapse on defecation. There was no evidence of intussusception (Figure 4).

Figure 1. Colonoscopic image showing a broad-based rectal lesion with irregular surface measuring approximately 4 cm.

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(a)

(b)

(c)

Figure 2. (a) Sagittal T_2 weighted image of the pelvis showing localised thickening of the anterior rectal wall (white arrow). (b) T_2 weighted axial oblique image of the rectum revealing focal thickening and mucosal ulceration between the 10 o'clock and 2 o'clock positions (arrows). (c) T_2 weighted coronal image of the rectum demonstrating focal, ulcerated area of thickening of the rectal mucosa (arrow).

Conservative management was applied and the patient reported improvement of his symptoms on follow-up outpatient clinic review.

Discussion

SRUS is a rare condition that typically affects young adults and describes a spectrum of clinicopathological abnormalities including:

- passage of blood and mucus from the rectum associated with straining and feeling of incomplete emptying of the rectum;
- rectal prolapse with or without abnormal perineal descent on evacuation proctography;
- abnormal endoscopic appearance of the rectum ranging from erythema to ulceration or polypoid lesions, which can be multiple or solitary. Lesions are most commonly on the anterior rectal wall, although they can be extensive or circumferential; and

Figure 3. (a) Solitary rectal ulcer on low-power magnification demonstrating distortion of the crypts, splaying of smooth muscle fibres of the muscularis mucosae and foci of hyperplasia in the crypts. (b) The arrow indicates smooth muscle fibres and fibroblastic cells in the rectal mucosa on higher magnification. (c) P53 immunostaining shows no expression in the majority of crypts or on the surface epithelium, excluding a neoplasm.

- classical histological appearance of fibrous obliteration of the lamina propria with disorientation of the muscularis mucosa and extension of smooth muscle fibres into the lamina propria [1].

The cause of SRUS is not known and there are several putative aetiologies. Ischaemia is considered an important factor in the development of SRUS with small-vessel trauma at the apex of a prolapsing mucosal fold predisposing to ischaemia [1]. The presence of internal or external rectal prolapse and paradoxical contraction of the pelvic floor might be involved in the development of SRUS, with the high rectal pressures needed to produce rectal voiding in the presence of external sphincter contractions predisposing to ischaemia and ulceration of the rectal mucosa [2].

Other studies have suggested direct trauma from rectal digitation as a possible cause of SRUS [3, 4].

Improvement of the symptoms of SRUS with behavioural therapy in patients with disturbance of toileting behaviour and excessive straining suggests that

psychological problems, expressed as disturbance of toileting behaviour, might be a factor in the aetiology of SRUS [1].

The diagnosis of SRUS is usually made on the basis of a combination of presenting symptoms and endoscopic and histological appearances. Although of limited value in the actual diagnosis of SRUS, radiological investigations can help to define the underlying disorder. Characteristic radiological appearances have been described on transrectal and endoanal ultrasound, defecating proctography and barium enema. To the best of our knowledge, radiological appearances of SRUS on MRI have not been described previously.

Typical features described on transrectal ultrasound include thickening of the muscularis propria and a lack of distinction between the mucosa and the muscularis propria [5]. Endoanal ultrasound can demonstrate marked thickening of the internal sphincter and thickening of the external sphincter and submucosa [6]. Defecation proctography can demonstrate internal rectal prolapse (intrarectal or intra-anal intussusception),

Figure 4. (a) Defecating proctogram demonstrating rectal prolapse (white arrow). The small bowel contents are opacified with oral contrast (black arrow). (b) Image demonstrates small bowel enterocele (black arrow) on complete rectal emptying.

external rectal prolapse and delayed or incomplete emptying [7].

Barium enema features of SRUS include thickening of the rectal folds, stricture formation, polypoid lesions and ulceration; however, these findings can be difficult to distinguish from more sinister neoplastic lesions [8–10].

To date, MRI is not employed as a routine radiological investigation in the investigation and management of patients with SRUS. In this case, an MRI scan of the rectum for local staging was requested because the endoscopic appearance mimicked a neoplastic lesion. MRI appearances of a thickened ulcerated mucosa in the anterior rectal wall were non-specific and indistinguishable from a malignant process. However, given that SRUS has a predisposition to occur in the anterior rectal wall, the presence of thickened rectal mucosa in this location on MRI could suggest SRUS in the correct clinical context.

This case highlights the general importance of differential diagnoses together with adequate clinical history in the reporting of radiological imaging. SRUS is demonstrated as one of the differential diagnoses of mural thickening of the rectum on MRI.

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