Ischaemic necrosis of the rectum and sigmoid colon complicating systemic lupus erythematosus

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Abstract

The case of a 37-year-old Caucasian female with a history of systemic lupus erythematosus, admitted to hospital due to progressively worsening abdominal pain and arthralgia. During hospitalisation, signs of acute abdomen developed. Laparotomy revealed perforation of the rectum, accompanied by necrosis of the rectosigmoid. Histologic examination revealed vasculitis involving small- and medium-sized vessels.
This case report emphasizes the point that colonic and especially rectal involvement from vasculitis, though unusual, may present with profound and possibly life-threatening manifestations and stresses the difficulties in clinical and histological differential diagnosis from other causes of systemic lupus erythematosus-associated abdominal pain.

Key words : systemic lupus erythematosus, vasculitis, intestinal necrosis, intestinal ischaemia, abdominal pain, rectum, sigmoid.

Introduction

Gastrointestinal (GI) manifestations are common in patients with systemic lupus erythematosus (SLE)[1]. They may overshadow other aspects of the disease and mimic any type of abdominal condition. Anorexia, nausea and vomiting are seen in about 50% of patients with SLE, but may represent intercurrent process or side effects of medications[1]. The reported incidence of GI disease directly attributable to SLE varies widely (2-30%) and is constituted to the presence of oral cavity lesions, oesophagitis, peptic ulcer disease, small intestinal involvement (vasculitis and mesenteric thrombosis)[1]. GI vasculitis along with its sequelae (intestinal ischaemia, necrosis and perforation) may potentially contribute to greater morbidity and mortality. Ischaemic colitis as a result of small-vessel, immune-complex-related vasculitis is a rare but recognized entity related to active SLE ; in most of the reported cases the rectum is spared (1,2).
This case report regards to a patient with a long-standing history of SLE, who underwent surgical exploration due to persistent, refractory to conservative management abdominal pain. Rectosigmoid necrosis with perforation was revealed at laparotomy and histology demonstrated small- and medium-sized vessel vasculitis.

Case report

A 37-year-old Caucasian female with a documented 12-year history of SLE, presented with colicky abdominal pain, low-grade fever (up to 37.8ºC) and arthralgia of the proximal interphalangial and wrist joints of 5 days duration. The diagnosis of SLE had been made on the basis of butterfly rash, arthritis, positive antinuclear antibody and a positive LE cell preparation. The patient required several hospital admissions during exacerbations of the disease. Transient renal dysfunction had been observed in a few instances ; renal biopsy had revealed secondary mesangial glomerulonephritis (WHO class II). At the time of admission she was on daily steroid treatment (methylprednisolone, 8 mg p.o. BID). The patient reported episodes of intermittent abdominal pain of similar intensity, which were spontaneously resolved during the past 3 months. At admission, her vital signs were stable. Physical examination revealed swollen and tender proximal interphalangial and wrist joints, oral cavity ulcers, a typical butterfly rash and diffuse tenderness at abdominal palpation without rebound or guarding. Haematocrit was 30.4% and haemoglobin was 9.2 g/dl. No significant renal involvement was evident, except for mild proteinuria (1.37 g/day), with an otherwise normal urinalysis. Serum urea nitrogen, creatinine, electrolytes, liver function tests, prothrombin time and activated partial thromboplastin time were within normal limits. HBsAg was negative. Erythrocyte sedimentation rate was 46mm/h, lactate dehydrogenase was 493IU/L (normal 140-280). Serum protein electrophoresis revealed hypergammaglobulinaemia. The serum IgG levels were elevated (2220 mg/dl, normal : 600-1540), while the IgA and IgM levels were within normal range. The direct Coombs' test was negative. The anti-double-stranded (ds) DNA antibody (radioimmunometric assay, RIA) was positive (89.6 IU/ml, normal < 8.3), as was the antinuclear antibody test (titer 1/320, with a diffuse immunofluorescence pattern). Serum C_3 and C_4 were within normal limits. The levels for Lupus anticoagulant tests were negative. IgM and IgG anticardiolipin antibodies were within normal range. C-reactive protein was elevated (16 mg/dl, normal < 1). Stool was positive for occult blood. Abdominal x-rays and ultrasonography, done upon admission were unremarkable.

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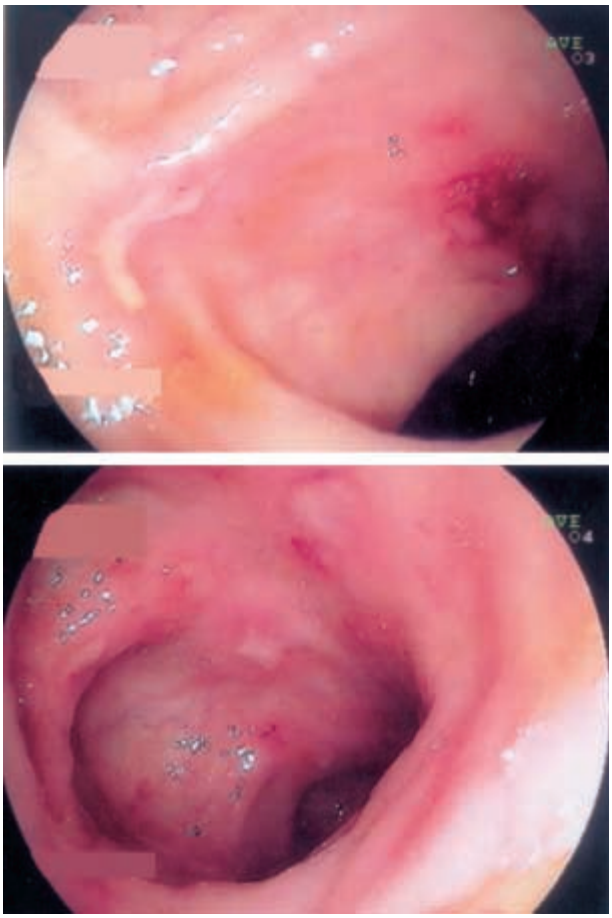

Fig. 1. — Colonoscopy, demonstrating ulcerations in the rectum.

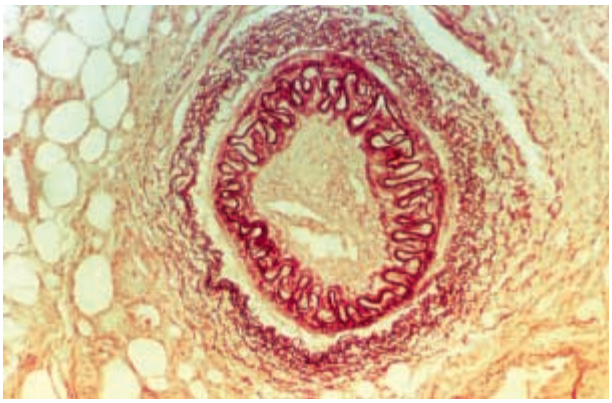

Fig. 2. — Considerable arterial occlusion in an arteriole of the bowel serosa (Shikata stain for elastic fibers, original magnification ×100).

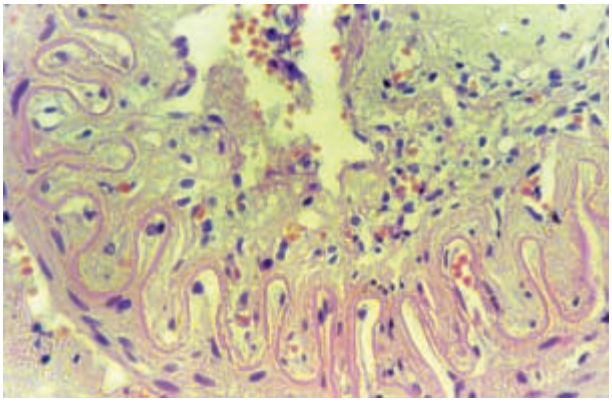

Fig. 3. — Presence of inflammatory cells in the wall of an artery (Haematoxylin-eosin, original magnification ×400).

The patient was admitted under the diagnosis of systemic exacerbation of her underlying SLE and consequently the dose of methylprednisolone was increased from 16 to 24 mg per day with the addition of hydroxychloroquine sulphate at a daily dose of 200 mg. She remained on a liquid diet. A rapid improvement of her arthritis was noticed, but the GI symptomatology persisted with concurrent deteriorating abdominal bloating and a few episodes of watery, bloody diarrhoea. A careful colonoscopy with low air insufflation was performed on the 8th day of hospitalisation, where several rectal ulcerations were demonstrated (Fig. 1). The following day, an abdominal computed tomography (CT) examination was performed, which was also unrevealing. The patient' s condition steadily deteriorated and in the evening of the 12th hospital day she developed severe lower abdominal pain associated with rebound tenderness and guarding. Vigorous hydration and appropriate intravenous broad-spectrum antibiotic treatment were instituted and an exploratory laparotomy was performed the following morning. At surgery, circumferential rectosigmoid junction necrosis as easily appreciated, accompanied by an upper rectal perforation just at the level of the peritoneal reflection. A sigmoid colectomy with anterior resection of the upper rectum was performed, until healthy looking intestinal wall and mucosa were identified. An end-colostomy and a Hartman's pouch from the remaining rectum were constructed.

The resected surgical specimen of rectum and sigmoid colon was 14 cm in length. Ulcerations measuring from 1 to 2.5 cm were observed on the mucosal surface, while the respective parts of the bowel wall serosa were thickened. Histological examination showed haemorrhage of the bowel mucosa ; focally necrotic lesions with formation of ulcers and erosions were observed. Throughout the bowel wall, small- and medium-sized vessels were involved by vasculitis, resembling that of polyarteritis nodosa (PAN) (Fig. 2). Arterioles demonstrated fibrinoid necrosis which often extended to involve the entire wall thickness. A brisk inflammatory cell infiltration was prominent in a considerable number of vessels. Intimal thickening with variable numbers of inflammatory cells, often inside the internal elastic lamina, was prominent (Fig. 3). Thrombus formation either mural or occlusive was accompanying the vasculitis. Localized peritonitis was the consequence of severe extramural vessels involvement. No significant feature of healing was detected in the involved vessels.

Therefore, the vascular changes observed were consistent with an active evolutionary phase of the vasculitis.

The patient was discharged 12 days postoperatively, following an uneventful recovery. She remained on maintenance therapy with oral methylprednisolone since discharge and has been remaining free of gastrointestinal symptoms during a follow-up period of 22 months.

Discussion

SLE natural history is commonly complicated by GI manifestations. The aetiology of abdominal pain in SLE might be difficult to determine and has a lengthy differential diagnosis (1). The acute abdomen in patients with SLE is a challenging diagnostic and therapeutic problem, since most patients, including the one at the present report, are commonly on chronic treatment with steroids and/or immunosuppressive agents. This may mask the physical findings of perforation and ischaemia, consequently delaying the usual signs of peritoneal irritation to fully develop and the appropriate surgical intervention to be instituted (3).

Some of the most potentially dangerous GI complications of SLE occur in the large intestine, secondary to vasculitis, which may progress to ischaemic colitis and eventually to bowel infarction and perforation. Nevertheless, ischaemic colitis complicated by colonic necrosis resulting from SLE-associated vasculitis is an uncommon feature. It develops in only 2% of all SLE patients and is associated with high morbidity and mortality (4,5).

The underlying pathology of vasculitis associated with SLE typically involves smaller vessels and is almost always accompanied by evidence of active disease. Medium or large vessels usually remain unaffected (2,6). Apart from small vessels, involvement of medium-sized vessels, (the typical feature of vasculitis associated with classic PAN) is uncommon in SLE (7) ; however PAN is sometimes indistinguishable from SLE vasculitis and, in its classic form, PAN most commonly affects the GI tract. The exact pathophysiological mechanisms involved in SLE-associated vasculitis and intestinal ischaemia still remain vague. However, they seem to include deposition of circulating immune-complexes leading to inflammation of the affected vessels and formation of thrombi ; the latter causes occlusion of the affected vessels and subsequent intestinal ischaemia, which in turn may lead to mucosal ulceration, intestinal infarction, necrosis and perforation (8).

The reported patient presented with persistent abdominal pain following similar intermittent episodes of pain attacks developed over a period of a few months. Zizic et al. noted that abdominal pain was present in two-thirds of patients with SLE for an average of 34 days before the acute abdominal crisis, ranging from 11 to 66 days (9). GI vasculitis is almost always accompanied by evidence of active disease elsewhere ; skin and joint involvement was apparent in the present case. The insidious course of the abdominal pain might be attributed to medications such as corticosteroids, which can cause GI upset, complicating differential diagnosis (1). Plain abdominal radiographs may not be useful early in the course of the disease like in the patient presented1. In such patients non-invasive investigations such as abdominal ultrasonography and CT should be considered first (1,10), although they did not prove helpful in the reported case. Colonoscopy, on the other hand, though sometimes associated with triggering ischaemic colitis11, provided significant help in differential diagnosis. In spite of this, the rarity of SLE-associated vasculitis resulting in ischaemic colitis, combined with the patient's accelerated deterioration, led to extreme difficulty in differential diagnosis. Had the possibility of vasculitis resulting in ischaemic colitis been considered earlier, other therapeutic approaches could have been tried. These include a more significant increase of corticosteroids, initiation of intravenous methylprednisolone pulse therapy, or the use of intravenous cyclophosphamide (4,5). Finally, the development of signs of acute abdomen rendered surgical intervention mandatory. Early laparotomy i.e. within 24-48 hours can be helpful to make a diagnosis of SLE-associated acute abdomen at a timely manner and thus improve prognosis in these patients1 despite the expected surgical risk, especially when the latter is accompanied by signs of disease activity, as in the case of our patient (12). Instead of exploratory laparotomy, a low threshold should also be present for recommending a less invasive diagnostic laparoscopy (1).

It is a fact that intestinal infarction may occur due to underlying vasculitis or hypercoagulability from secondary antiphospholipid syndrome. High levels of antiphospholipid antibodies, thrombocytopenia and prolonged prothrombin time can coincide with an episode of intestinal ulceration and infarction (1). The possibility of SLE-associated antiphospholipid syndrome being associated with manifestations similar to those of our patient has been discussed elsewhere (1,13,14). It was ruled out of differential diagnosis in this case based on the patient's history, the clinical manifestations and the laboratory and histopathological findings which were incompatible with the antiphospholipid syndrome (e.g. absence of high levels of anticardiolipin antibodies, no lupus anticoagulant) (14).

The presence of rectal ulcerations remains an uncommon pathological finding of the present case. However, despite the rectum-sparing nature of ischaemic colitis, there is a well recognised possibility of its occurrence in watershed areas of the colon blood supply like the rectosigmoid junction (Sudeck's point), which resulted to the circumferential bowel wall necrosis appreciated in our case (15).

It is also noteworthy that histological examination of the extracted bowel revealed vasculitis of both small- and medium-sized vessels, a feature typically found in PAN and rarely seen in SLE. The possibility of an

underlying PAN being the cause of vasculitis in our patient was easily ruled out, based on the fact that attribution of vasculitis to PAN requires SLE to be quiescent for a long time, which was clearly not the case in the reported patient (7).

In conclusion, this case report highlights the point that colonic and especially rectal ischaemia and necrosis due to SLE-associated vasculitis, though unusual, may present with profound and possibly life-threatening manifestations, necessitating prompt surgical intervention and emphasizes the clinicopathological difficulties in the differential diagnosis from other causes of SLE-associated abdominal pain.

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