SHORT REPORT

Comprehensive MRI diagnosis of sacral osteomyelitis and multiple muscle abscesses as a rare complication of fistulizing Crohn's disease

Massimo Tonolini⁎, Anna Ravelli, Alessandro Campari, Roberto Bianco

Department of Radiology, "Luigi Sacco" University Hospital, Via G.B. Grassi 74, 20157 Milan, Italy

Received 19 February 2011; received in revised form 14 April 2011; accepted 14 April 2011

KEYWORDS
Crohn's disease;
Fistula;
Osteomyelitis;
Muscle abscess;
MRI

Abstract
Pelvic osteomyelitis is a very uncommon complication of Crohn's disease, usually clinically unsuspected in the setting of acute Crohn's disease relapses.
The case of a 21-year old patient is reported, in whom ileo-cecal inflammatory disease was complicated by fistulization to the presacral space and sacral osteomyelitis, plus multiple abscesses involving the iliopsoas, posterior paravertebral and gluteal muscles.
As confirmed by surgical and pathological findings, MRI provided comprehensive imaging diagnosis by demonstrating both the pathogenesis and the full extent of the complex, deep pelvic inflammatory process.
Low back pain in patients with Crohn's disease should not be underestimated since its differential diagnosis includes serious and potentially life-threatening causes such as osteomyelitis, so prompt assessment with cross sectional imaging, particularly MRI, is necessary.
© 2011 European Crohn's and Colitis Organisation. Published by Elsevier B.V. All rights reserved.

1. Introduction

Rare infectious musculoskeletal complications in Crohn's disease include iliopsoas and gluteal abscesses, abdominal wall fistulae and osteomyelitis of the pelvic bones: the latter has been reported in 0.7% of patients in the largest radiological series.¹

Deep-seated muscle abscesses and septic osteomyelitis are often clinically unsuspected in the setting of acute Crohn's disease relapses, but require a prompt and precise diagnosis with cross-sectional imaging since they represent a source of major morbidity.

Globally, our review of the literature discovered very few occurrences of sacral osteomyelitis in patients affected with Crohn's disease, most of them as reported sporadic cases and almost invariably diagnosed with Computed Tomography (CT).¹⁻⁹

1.1. Case report

A 21-year old male patient presented to our Hospital complaining of generalized malaise and severe pelvic and
lumbosacral pain, radiating to his left gluteal region and thigh.

Four years earlier, he had been diagnosed affected with ileocolic Crohn’s disease and treated with mesalazine and steroid enemas, followed by chronic low-dose oral corticosteroids; he had never undergone surgery.

The patient was found in unwell general conditions, weighing 55 kg. He had 1–2 daily evacuations with semi-formed stools. At physical examination, his abdomen was diffusely and markedly tender at palpation without signs of peritonitis; stiffness and pain at mobilization involved the lumbosacral spine and the left leg. Laboratory tests disclosed anemia (Hb 9.6 g/dL), and severe inflammatory status (C-reactive protein 112 mg/L, WBC 65,400/mmcc). Blood cultures were positive for Staphylococcus Hominis and Staphylococcus Epidermidis.

Bowel ultrasound (not shown) confirmed known Crohn’s disease involving cecum and distal ileum, the latter showing increased mural thickness, stratification and hypoechojenicity for nearly 15 cm in length, with irregular serosal border and associated mesenteric fat proliferation.

Colonoscopy and biopsy findings, including oedematous and hyperaemic mucosal surface, large geographical ulcers and ileocecal valve stenosis, were consistent with ileo-cecal Crohn’s disease. The rectum was spared and the remainder of the large bowel had sparse erosions. Esophago-gastroscopy yielded negative findings.

Plain radiographs of the lumbosacral spine and pelvis (not shown) were interpreted as unremarkable. MRI detected a large, multiloculated presacral abscess, in communication with thickened and inflamed ileal loops converging in a fashion suggestive of entero-enteric fistulization. Abnormal signal intensity and contrast enhancement consistent with osteomyelitis involved most of the adjacent L4, L5 and sacral vertebral bodies, plus the right peduncle and lateral process of L5 (Fig. 1 A...E). Multiple abscess collections extended to the ischiogluteal region on the left side, and to the right into the psoas muscle and the posterior abdominal wall (Fig. 1 F...H).

Surgical en bloc resection of the distal ileum and cecum-ascending colon was performed, including entero-enteric fistulas, with termino-terminal ileo-coolic anastomosis, drainage and curettage of right psoas muscle and presacral abscessual collections.

Microscopic examination of the pathologic specimen confirmed active ileocolic Crohn’s disease with severe, transmural acute and chronic inflammation, stenosis of the terminal ileum and fistulization.

Just before hospital discharge inflammatory laboratory abnormalities had nearly normalized, and postoperative unenhanced CT (Fig. 1 I) showed resolution of the presacral abscess.

2. Discussion

Crohn’s disease is characterized histologically by a chronic transmural inflammatory process of the alimentary tract, a feature that accounts for the development of both intestinal and external fistulae. Sometimes, fistulization to the retroperitoneal space leads to the formation of iliopsoas or even more uncommonly presacral purulent collections.1–3,8

Osteomyelitis of the pelvic bones is an exceedingly rare complication of Crohn’s disease and may result from either direct extension of intestinal fistulas to the pelvic skeleton, or from erosion into bone of a contiguous deep abscess.1–6

The most frequently reported site of osteomyelitis are the ilium and sacrum, followed by the lumbar vertebrae, the femoral head and the hip joint.6,7

Exceptionally, musculoskeletal complications may lead to diagnosis of intestinal Crohn’s disease.5,6,9 Most usually, osteomyelitis and pelvic abscesses occur in patients with longstanding, fistulizing entero-colic Crohn’s disease, averaging 4 years of intestinal disease history.1,3,6

Osteomyelitis invariably follows direct extension of internal fistulas, with or without an accompanying intra-abdominal or pelvic abscess, so infecting micro-organisms belong to enteric flora.4,6

Surgical treatment of deep pelvic abscesses involves open incision, curettage and drainage, with concomitant en-bloc resection of the diseased bowel segment and fistulas. Intravenous antibiotic therapy is paramount to definitive treatment and it should be guided by the microbiological assays.5,6

Patients with Crohn’s disease often complain of low back pain, usually related to muscle strain and aseptic sacroilitis or spondylitis. In the largest reported series, almost 50% of pyogenic musculoskeletal complications were not clinically suspected, since presentation of sacral osteomyelitis can be indistinguishable to an intestinal exacerbation of Crohn’s disease.1 Suspicion of infectious bone involvement should be raised by the well-described clinical features including stiffness and pain at mobilization of the lumbosacral spine with limitation of hip extension.1,6

In the past, Crohn’s disease musculoskeletal complications have been almost invariably diagnosed by means of CT,1,4,7 or more rarely with nuclear bone scan.3 Undoubtedly CT (currently performed with multidetector scanners) is a fast and widely available imaging modality, particularly useful in the emergency setting since it allows the detection of both bowel mural changes and extraluminal abnormalities1; CT should be prescribed with caution in consideration of its radiation dose and the young age of most Crohn’s disease patients, often needing repeated examination during their lifelong follow-up.

As demonstrated by our case, MRI allows a comprehensive diagnosis of Crohn’s disease complicated by sacral osteomyelitis and multiple muscle abscesses, allowing a correct therapeutic planning. Active Crohn’s disease involving the ileo-cecal tract was documented, with characteristic features including bowel wall thickening, abnormal mural signal intensity and intense contrast enhancement, and complicat ed by entero-enteric and entero-sacral fistulization.

Besides its biological non-invasiveness, other advantages of MRI over CT include native multiplanar acquisition and intrinsic high contrast resolution. The dominant presacral purulent collection as well as its multiple extension pathways to the psoas, gluteal and posterior paravertebral muscles was precisely depicted in their size and relationship to the spine by means of multiplanar images. MRI is by far the best imaging modality to assess spinal infections, since it allows detection of bone marrow abnormalities before osseous destruction occurs.10 Short-tau inversion recovery (STIR) sequences have high sensitivity in the visualization of T2-hyperintense marrow
signal corresponding to inflammation and infection; T1-weighted sequences (best with frequency-selective fat saturation) after intravenous gadolinium-based contrast injection are usually acquired, considering their added value for maximizing specificity and allowing more precise detection of infectious process extent.10 Furthermore, MRI allowed the differential diagnosis from other possible causes of the patient's clinical presentation, including more frequent aseptic spondylitis and sacroiliitis or other uncommon infections such as tuberculosis and brucellosis.5

### References


