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Vertebral osteomyelitis as a complication of Crohn's disease

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Abstract Vertebral osteomyelitis arising from an enteric fistula in patients with inflammatory bowel disease is rare. We report on a patient with Crohn's disease who developed an enteric fistula, resulting in a pre-sacral abscess and vertebral osteomyelitis involving the L4 and L5 vertebral bodies and related disc

spaces. This was managed by a defunctioning colostomy with drainage of the pre-sacral abscess. The vertebral lesion was successfully managed non-operatively.

Key words Crohn's disease · Enteric fistula · Vertebral osteomyelitis · Lumbar spine

Case report

A 35-year-old male patient was diagnosed to have Crohn's disease of the large bowel in March 1994. This was managed by azathioprine and prednisolone. In October 1995, he developed pelvic and back pain, which was thought to be arising from a pelvic abscess. At laparotomy, an abscess was confirmed to arise in the appendiceal region with a chronic ileal fistula. The abscess was drained and a right hemicolectomy was performed.

In February 1996, in the light of continued low back and leg pain, further investigations including plain radiographs, bone scintigraphy and CT of the lumbar spine were performed. These suggested vertebral osteomyelitis at L4/5, but a CT guided aspiration biopsy failed to identify the infective organism. The patient was treated empirically with ampicillin and metronidazole.

The patient remained systemically unwell and failed to maintain his weight. He was therefore referred to our unit in June 1996. On examination he had severe tenderness over L4 and L5 posteriorly with paraspinal spasm. There was no neurological deficit. The ESR was elevated at 126 mm/hr (normal < 6 mm/h) and the C-reactive protein was 83 mg/l (normal < 10 mg/l). Further investigations were carried out: plain radiographs of the lumbosacral spine showed collapse of the L5 vertebral body (Fig. 1). MRI showed virtually complete destruction of the L5 vertebral body with involvement of the contiguous disc spaces. There was a sizable pre-sacral

collection with an apparent fistulous communication with adherent bowel loops (Fig. 2). A water-soluble enema failed to demonstrate any communication between the large bowel and the pre-sacral abscess. Two weeks after admission a Hartmann's procedure was performed, which includes excision of the sigmoid colon, closure of the rectal stump and left-sided end colostomy. The rectosigmoid was found to be densely adherent to a pre-sacral abscess, which was drained, and a defunctioning colostomy performed. Histological examination of the resected large bowel showed transmural inflammation with a fistulous tract. Intraoperative cultures were negative.

In the absence of neurological deficit and in view of the extensive scarring likely to be encountered in the pre-sacral region, conservative treatment of the spinal disease was considered most appropriate. The patient was referred for nutritional support and treated with intravenous cefotaxime, metronidazole and gentamicin for 1 month, followed by a 1-month course of oral ciprofloxacin, amoxycillin and metronidazole.

At follow-up, 13 months after the onset of low back pain and 9 months after the cessation of antibiotic treatment, the patient had no back or leg pain. There was significant improvement in his general condition. Plain radiographs of the lumbosacral spine showed some healing of the vertebral lesions at L4 and L5 (Fig. 3). There was a residual kyphosis at the lumbosacral junction because of loss of height of the L5 vertebral body. The C-reactive protein levels on three consecutive monthly occasions were less than 6 mg/l and the

Fig. 1 Plain lateral radiograph of the lumbosacral spine (June 1996) shows partial collapse of the L5 vertebral body with endplate irregularity. The relative preservation of disc height is not typical of spinal infection

Fig. 2 Sagittal MR image of the lumbosacral spine (T1-weighted). There is partial destruction of the L5 vertebral body with involvement of the contiguous disc spaces and early involvement of the L4 inferior endplate. A sizeable multi-loculated pre-sacral abscess is identified (*arrowheads*) and there is fistulous communication with adjacent bowel loops (*large arrow*)

Fig. 3 Plain lateral radiograph of the lumbosacral spine (February 1997) shows restoration of density of the L5 vertebral body, disc space narrowing and a mild kyphosis

Fig. 4 Sagittal MR scan (contrast-enhanced sagittal T1-weighted image) (June 1997). Pre-sacral enhancing tissue is identified (*arrowhead*), though this is far less marked than on the original MR scan (see Fig. 2). Some stranding is seen to extend towards the bowel loops at the site of the previous fistula. Persisting abnormality is seen in the L4 and L5 vertebral bodies and intervening discs

ESR had come down to 26 mm/h. Following general surgical review, closure of the colostomy was planned. A further MR scan with contrast enhancement showed a definite improvement in the overall appearance with some remodeling of the L5 vertebral body and a reduction in the pre-sacral and paraspinal inflammatory disease (Fig. 4).

Discussion

Since the first description of regional enterocolitis by Crohn et al. [3] complications due to local fistulisation and abscess formation have become well recognized, occurring in as many as 20% of cases [5, 16]. Abscesses may result from deep fissuring through the diseased bowel wall or as a result of suppuration in a group of lymph nodes draining an area of Crohn's disease. Management of ab-

scesses is by open incision, curettage and drainage, with concomitant en-bloc resection of the diseased bowel segment and fistula. Antibiotic therapy remains an important adjunct to definitive surgical treatment [2]. Following surgery, abscesses may recur due to anastomotic dehiscence, faecal fistula, infected haematoma or recrudescence of Crohn's disease [9]. Retroperitoneal abscess formation is uncommon, though is more likely to require surgical intervention [6].

Low back pain is a frequent complaint in patients with Crohn's disease and is usually due to muscle strain, sacroiliitis or spondylitis [10]. There are only a few published reports of Crohn's disease involving the spine [1, 7, 8, 11, 14, 17]. The mechanism of extension of infection to the spine is thought to be either direct spread through intestinal fistulae or possibly as a result of septic throm-

bophlebitis extending via the retroperitoneal vertebral venous plexus [1]. Osteomyelitis of the pelvic bones and femur are further rare complications of Crohn's disease [15] and are thought to be due to either direct extension of intestinal fistulas to the surrounding bones or formation of a contiguous soft tissue abscess that subsequently erodes into bone.

The treatment of spinal osteomyelitis includes rest, immobilization and administration of intravenous antibiotics. Appropriate antibiotic treatment should be guided by the causative organism, biopsy and culture being advised whenever possible. Operative treatment is indicated when there is evidence of osseous involvement resulting in neurological deficit, clinical infection unresponsive to antibiotics or refractory infection [13].

In this case, MRI revealed a pre-sacral abscess and an enteric fistula as well as established osteomyelitis of the lower lumbar and upper sacral spine. The pre-sacral abscess and chronic ileal fistula were managed by drainage of the abscess, defunctioning colostomy and a prolonged course of antibiotics, supplemented by nutritional support. With anterior debridement and strut grafting of the lumbosacral spine, it would have been possible to prevent the kyphosis and obtain tissue for microbiology. However, in view of the pre-sacral abscess and active Crohn's disease, conservative management was the preferred option and resulted in a successful outcome.

It is acknowledged that the kyphosis at the lumbo-sacral junction may result in back pain in the long term. Pun et al. [12] reported a long-term follow-up of patients with tuberculosis of the lumbo-sacral junction. Kyphosis was seen in all the patients treated conservatively. There was a direct relationship between the incidence and severity of back pain and the incidence of abnormal lumbo-sacral angle. Anterior debridement and fusion with a strut graft allows eradication of infection and osseous fusion and can reduce the incidence and degree of kyphosis [4, 12].

As illustrated in this case, MR imaging is helpful in defining the location and extent of spinal disease as well as associated soft tissue extension. MR imaging may be used for the follow-up of such cases where resolution of the soft tissue changes along with evidence of healing of the spinal disease can be seen.

In conclusion, low back pain in a patient with Crohn's disease may result from various causes. Unrelenting back pain with systemic features in the context of Crohn's disease should raise suspicion of retroperitoneal disease extension. This should be investigated thoroughly and needs urgent multidisciplinary management. Radiological investigations including MRI may be helpful in identifying the extent and location of disease; in this case it also demonstrated a fistulous communication with the affected segment of bowel, which impacted on the patient management.

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