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Images in Rheumatology

A "dagger" in the abdomen: An unusual cause of abdominal pain

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A 65-year-old man with end-stage renal failure on peritoneal dialysis, cardiomyopathy with complete heart block, and aortic regurgitation presented with periumbilical pain for a week and a history of recurrent falls over the past few months. He did not have fever, vomiting, or diarrhea, and the dialysate effluent was clear. Abdominal examination, including the peritoneal dialysis catheter exit site, was unremarkable. Neurological examination of both his lower limbs was also unremarkable, and the anal tone was intact without saddle anesthesia.

An abdominal radiograph revealed a "bamboo spine" and the "dagger sign," a single central radiodense line owing to the ossification of supraspinous and interspinous ligaments (Figure 1). Spine radiographs revealed T10 and T12 vertebral compression collapse with grade 1 anterolisthesis of T9 on T10 vertebrae, as well as fused sacroiliac joints bilaterally. Computed tomography revealed a comminuted fracture of the T10 vertebral body extending toward T9/T10 intervertebral disc space with displacement of its right superior facet contributing to narrowing of the spinal canal, together with facet joint hypertrophy, narrowed lateral recesses, and exit foramina at multiple levels. Flowing syndesmophytes, anterior and posterior ligament ossification, and Romanus lesions were also found. The latter is also known as the "shiny-corner sign" and reflects reactive sclerosis because of vertebral end-plate edge erosions in inflammatory spondyloarthropathies (1). Magnetic resonance imaging could not be safely performed because of

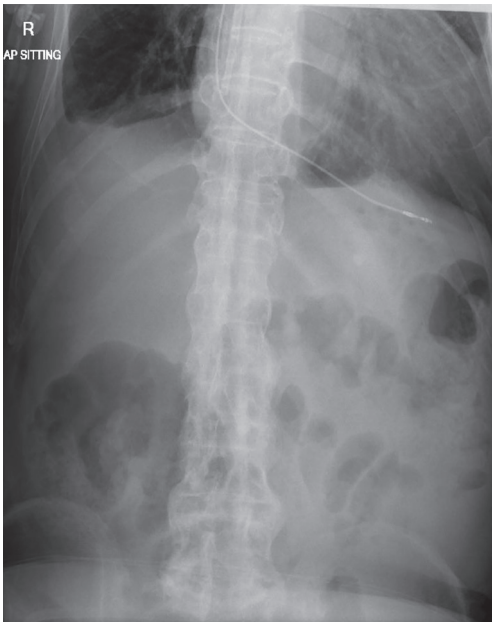

Figure 1. Abdominal radiograph showing a "bamboo spine" owing to the vertebral body fusion by syndesmophytes and a single central radiodense line because of ossification of the supraspinous and interspinous ligaments, also known as the "dagger sign."

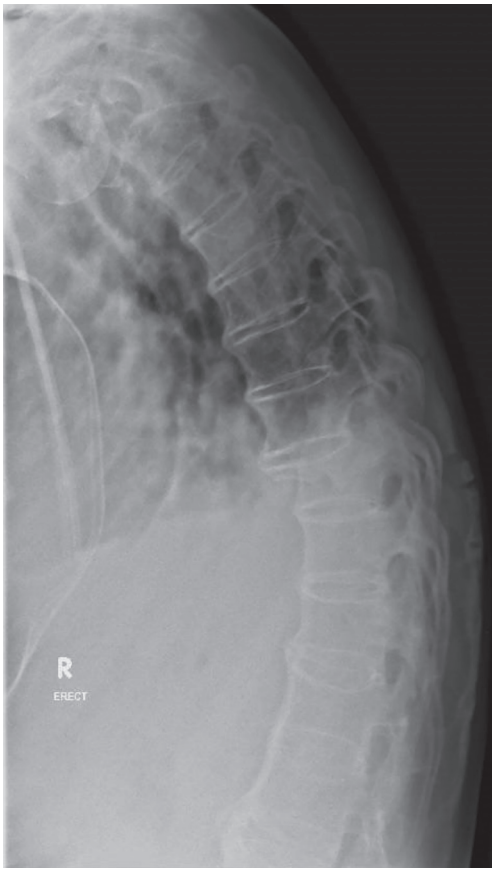

Figure 2. Lateral view of the thoracic spine radiograph demonstrating T10 and T12 vertebral compression collapse with grade 1 anterolisthesis of T9 on T10 vertebrae.

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pacemaker incompatibility. Other imaging and laboratory tests were unremarkable for any intra-abdominal pathology.

His abdominal pain was diagnosed to be radiculopathy from spinal stenosis owing to underlying ankylosing spondylitis, exacerbated by T10 "chalk-stick" fracture (Figure 2). The florid syndesmophytes, facet joint hypertrophy, and the T10 fracture likely caused narrowing of the spinal canal and T10 nerve root injury by direct compression and/or indirectly by raised intrathecal pressure (2).

Flowing syndesmophytes, due to ossification of the outer fibers of the annulus fibrosis with bridging of the corners of one vertebra to another, may also be seen in diffuse idiopathic skeletal hyperostosis (3). However, the presence of significant bilateral sacroiliitis and history of aortic regurgitation favored the diagnosis of ankylosing spondylitis (4). Significant axial disease can result in the classical rigid fused "bamboo spine" and increased risk of "chalk-stick" fractures (like a broken chalk), even in the absence of significant trauma, because of altered biomechanics (5).

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