Chalk-stick fracture in ankylosing spondylitis

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Presentation

A 49-year-old man came to the emergency department, because of back pain after a fall from his own height. Due to a history of ankylosing spondylitis (AS), his back had already been painful and stiff, though the pain had abruptly worsened since the fall. On examination, he had normal vital signs and no evident internal organ or nervous system injury. However, his kyphotic spine was moderately tender, particularly at the thoracolumbar area. Plain radiographs (Fig. 1a, b) revealed complete sacroiliac and spinal ankylosis except for the T9-T10 space, which, instead, seemed slightly widened (arrow). To rule out a spinal injury, a computed tomography (CT) was performed. The 3D reconstruction of the CT (Fig. 1c) revealed a spinal fracture through the T9-T10 intervertebral disc (arrow) up to the posterior vertebral elements completely dissecting the spine (chalk-stick fracture). The patient was prescribed braces and advised to remain at bed rest. In the following weeks, his back pain gradually improved and he resumed his prior activity.

Discussion

In AS patients, spinal fractures occur up to fourfold more frequently than the general population, with a lifelong incidence of 5–15% [1]. They often result from a low-energy trauma to the rigid and osteopenic spine and affect predominantly the cervical (81.2%) rather than the thoracic (10.7%) or

lumbar spine (7.8%). Neurologic deficits are evident in up to 67.2% of patients upon admission [2, 3]. The treatment may be surgical or conservative depending on the stability of the fracture, presence of neurologic complications and the patient's general condition [1].

Regarding diagnosis, plain radiographs and even transverse CT images may fail to show the disruption of bone contours. Therefore, when facing patients with spinal ankylosis, a high degree of suspicion is warranted, so as to rule out this potentially devastating injury by appropriate imaging.

Compliance with ethical standards

Disclosures None.

Financial support received for the study None.

Ethical approval Approval has been received by the Institutional Review Board of University Hospital of Alexandroupolis, ES6/T13/28-9-2017, and all procedures are in accordance with the 1964 Declaration of Helsinki.

Informed consent The patient's written informed consent to publish the material has been obtained.

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Fig. 1 **a** Anteroposterior pelvis radiograph showing complete obliteration and residual sclerosis of both sacroiliac joints, consistent with ankylosing spondylitis. **b** Lateral radiograph of the thoracolumbar spine showing total spinal ankylosis except for the T9-T10 space, which appears wider than the adjacent spaces (arrow). **c** Three-dimensional reconstruction of the computed tomography of the spine revealing a chalk-stick fracture through the ankylosed T9-T10 intervertebral space opening to the front (arrow)