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Vertebral compression fracture in CT imaging – a case study

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Abstract

Compression fractures of the spine are frequent clinical problems, include damage to the

vertebral bodies, leading to their collapse and reduction in height. A 67-year-old woman with symptoms of constant back pain, especially during standing and walking, the mobility of the spine was limited while lying on the back decreased the feeling of pain. As a result of the study, compression fractures of the three thoracic vertebrae were observed, this concerned Th6, Th8, Th11 vertebral bodies and in the case of the first lumbar vertebrae (L1). A computed tomography (CT) scan allows for the best imaging of bony anatomy and improved assessment of loss of height, retropulsion of fragments into the central canal.

Keywords: vertebral compression fracture, spine, computed tomography

1. Introduction

Compression fractures of the spine are frequent clinical problems, include damage to the vertebral bodies, leading to their collapse and reduction in height. The most dangerous are falls in a sitting position (e.g. from a chair) that lead to excessive backbone and compression of the spine and, as a consequence, a compression fracture in which the vertebral body deforms, taking on a wedge shape. Due to the rich innervation of the spinal cord, the consequence of a compression fracture is severe pain that occurs at the time of injury. In cases of significant damage to the vertebral body, it may fragment, which may travel to the lumen of the spinal canal and thus constrict and damage the nervous structures. Factors leading to compression fractures: advanced age, osteoporosis, severe trauma (fall from the height, communication injury), metastases to the spine. X-ray and CT are the most commonly used imaging tests in the diagnosis of this fracture [1-4].

2. Case presentation

A 67-year-old woman with symptoms of constant back pain, especially during standing and walking, the mobility of the spine was limited while lying on the back decreased the feeling of pain. The patient underwent computed tomography (CT) examination. For diagnostic imaging was used the SOMATOM Definition AS (Siemens) and analyzed with SYNGO Multi-Modality CT Workstation (Siemens). As a result of the study, compression fractures of the three thoracic vertebrae were observed, this concerned T6, T8, T11 vertebral

bodies and in the case of the first lumbar vertebrae (L1) (Figure 1).

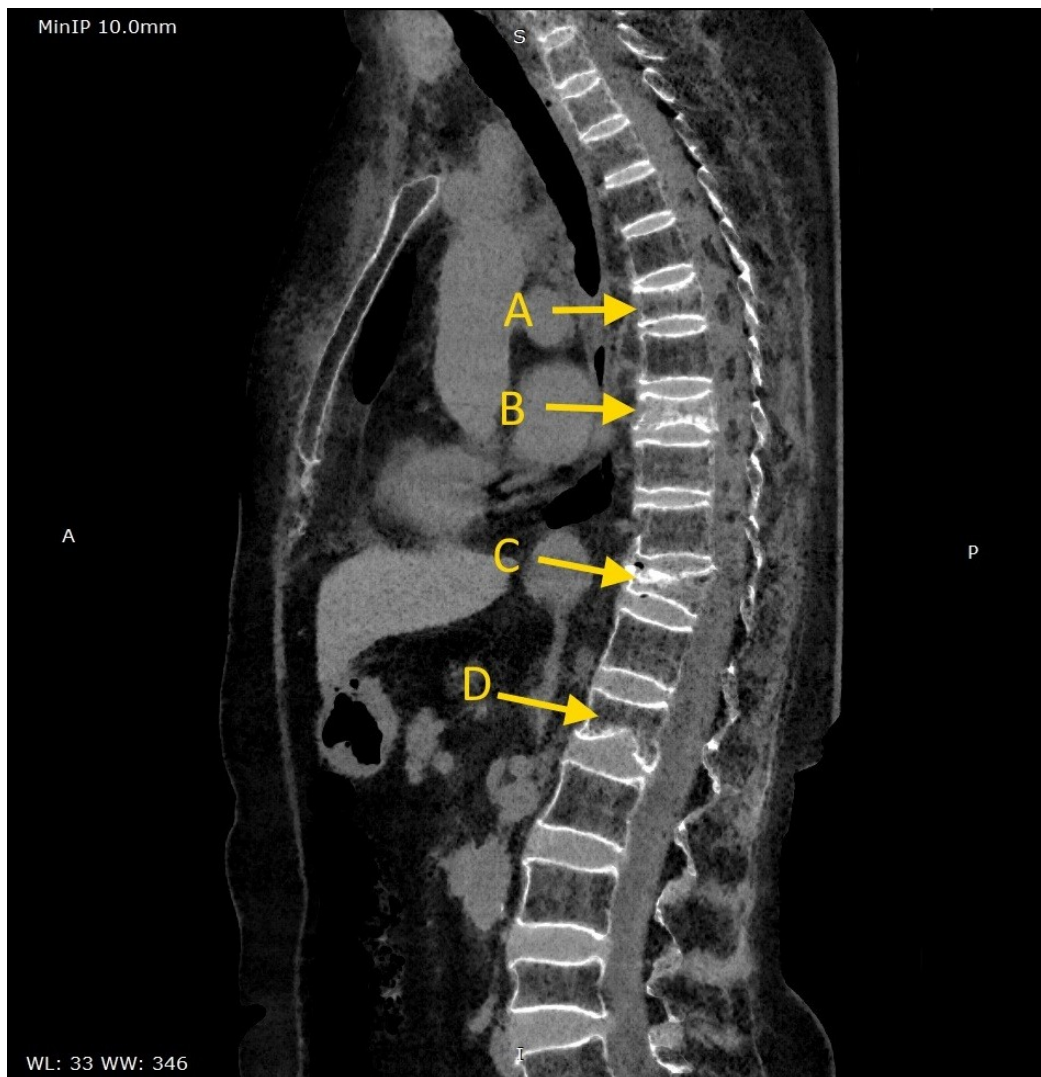


Figure 1. The CT scan (image with sagittal reconstruction in maximum intensity projection) detects deformation of the vertebrae resulting from compression fracture (yellow arrow):

A – T6, B – T8, C – T11, D – L1.

3. Discussion

Compression fractures most often occur in the lower thoracic spine (Th10-Th12) and the initial lumbar spine (L1-L2). Vertebral fractures are directly correlated with increasing age and incidence of osteoporosis [5]. The rate of vertebral fractures increases from an annual incidence of 0.9% and prevalence of 5%–10% among middle-aged women in their 50s to 60s, to an incidence of 1.7% and prevalence of greater than 30% among those 80 years and older [6]. A computed tomography (CT) scan allows for the best imaging of bony anatomy and improved assessment of loss of height, retropulsion of fragments into the central canal.

Vertebral fracture is associated with reduced overall quality of life mainly through back pain, reduced physical capability, perceived poor general health. The most common treatments for a thoracic compression fracture are: pain medications, decreasing activity, and bracing. In rare cases, surgery may also be necessary. Quick and correct diagnosis and a fixed treatment plan can effectively influence the process of treatment of spinal compression fractures, and the patient can return to the desired life activities [7-12].

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