

Spinal cord lesion due to an unexpected metallic foreign body

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Section: Neuroradiology

Area of Interest: Neuroradiology spine Spine

Procedure: History

Imaging Technique: Image manipulation / Reconstruction

Imaging Technique: Conventional radiography

Imaging Technique: CT

Special Focus: Foreign bodies Trauma Case Type: Clinical Cases

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Patient: 55 years, male

Clinical History:

The patient was admitted to the emergency department due to the sensation of a sudden jolt through the body, and thereafter rapid development of hyperalgesia and paraesthesia predominantly in the left upper and lower extremity and torso, as well as haemoptysis. The symptoms started suddenly while operating an industrial lawnmower.

Imaging Findings:

The supine chest X-ray taken at admission showed no pathology concerning the lungs or heart, but an approximately 15 millimetre long X-ray-blocking foreign body could be seen projected over the spine at the C7 level (Fig. 1). MRI of the spine taken one day after admission showed a metallic artefact distorting the images at the C7 level, with no other acute findings (Fig. 2). Subsequent CT scan of the cervical spine showed an approximately 25 millimetre long and 3 millimetre wide metallic object with the anterior edge jammed in the posterior part of the vertebral body of C7 and the posterior edge located in the left lamina of C7, most likely penetrating the spinal-cord. A slight soft tissue emphysema in the para-tracheal space and along the sternocleidomastoid muscle bilaterally was also present (Fig. 3).

Discussion:

Penetrating injuries of the spinal cord with a retained foreign body is seldom seen in Denmark, but searching the literature similar cases are found. One case describing a Chinese patient suffering from a penetrating lesion of the spinal cord at the C6 level, due to a fragment from a metallic wire [1]. This patient also presented with similar symptoms of hyperalgesia and paraesthesia, as well as mild paraplegia. Other described cases include acupuncture needles penetrating the spinal cord at the C3 level as well as knife-stabbing with a retained blade in the spinal canal [2-3]. Naturally depending upon the size, severity and location of the spinal lesion the symptoms may vary from mild paraesthesia, to full paraplegia or death.

A patient with the above described neurological symptoms should warrant imaging of the spinal-cord, which of course is best done with MRI. However, given the patient's haemoptysis and the sudden onset of symptoms while operating high energy machinery, one might suspect a traumatic pathogenesis. In this odd case one would have

been better off starting with a CT scan, given the metallic foreign body, but it is always easy to evaluate past events with the wisdom of hindsight.

The supine chest X-ray obtained at admission clearly showed the foreign body, but it was not noticed by the inspecting radiologist (Fig. 1). Most likely it was written off as a foreign body related to the patient's clothes or jewellery. A lateral film would of course resolve this issue. It might also have been spotted by the technologist obtaining the film, who could look for foreign bodies on the patient's skin and clothes, quickly resolving the matter. The foreign body was, however, unfortunately not detected, and the patient was sent to MRI imaging of the spinal canal. The MRI scan was stopped once the metallic artefact was detected (Fig. 2). Luckily the foreign body did not have strong magnetic properties, and therefore no harm was done to the patient. Accidents related to unexpected magnetic metals in MRI [4], one even fatal [5], have been described. The following CT scan clearly showed the foreign body as described above, confirming the diagnosis.

One day after diagnosis the wire fragment was surgically removed through posterior access (Fig. 4). Oesophagoscopy and tracheoscopy were also performed, where penetrating lesions were identified, although small and not requiring treatment. The patient is still suffering from symptoms of paraesthesia, almost two years later.

Differential Diagnosis List: Cervical spinal-cord injury due to foreign body, Apoplexy, Spinal stenosis, Spinal disc herniation, Multiple sclerosis exacerbation

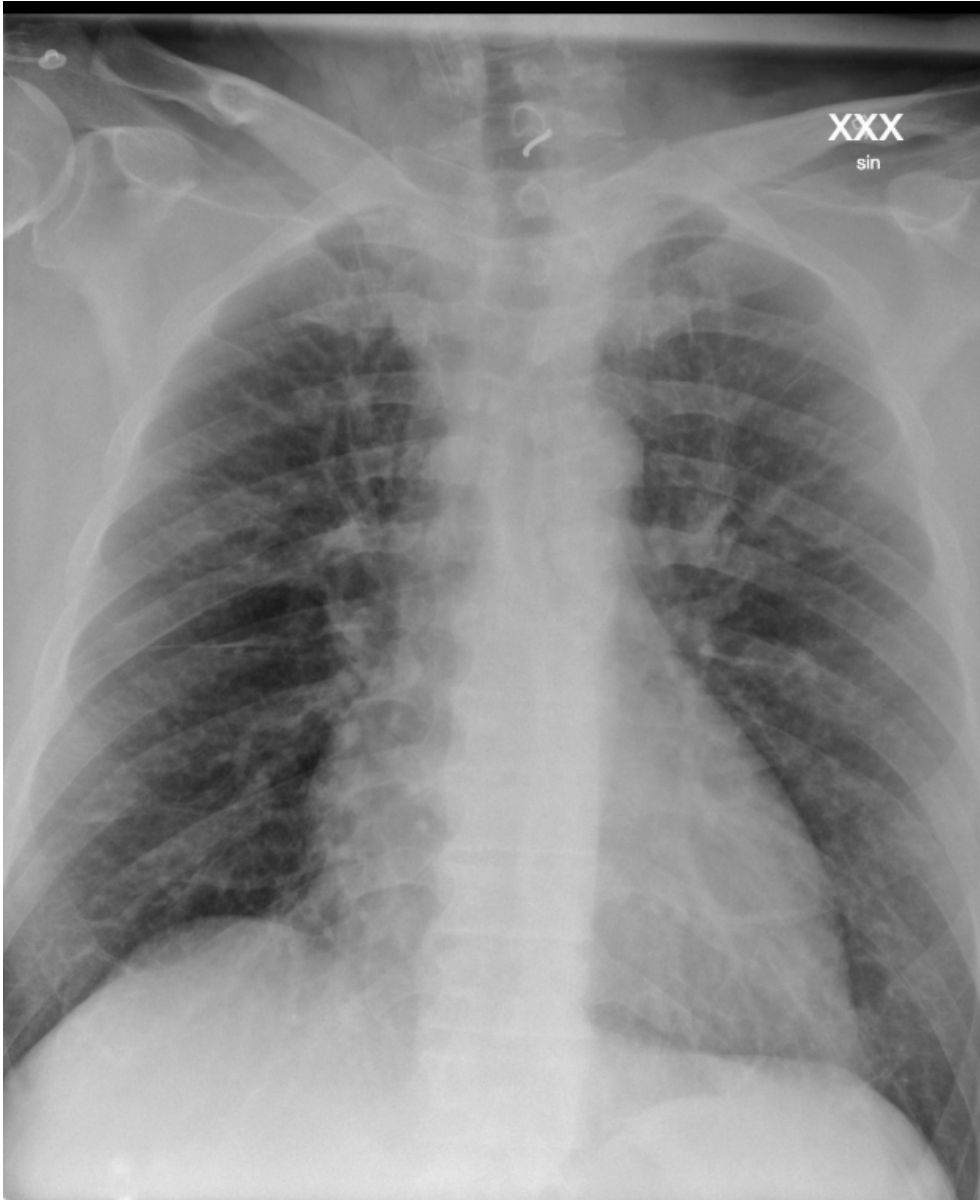
Final Diagnosis: Cervical spinal-cord injury due to foreign body

References:

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Figure 1

a



Description: Supine chest X-ray showing an X-ray blocking foreign body projected over the spine at the C7 level. No lateral film was obtained. **Origin:** Department of Radiology, the Regional Hospital of West Jutland, Holstebro, Denmark

Figure 2

a



Description: Sagittal T1-weighted MRI images showing a distorting artefact at the C7 level implying the presence of a metallic foreign body. **Origin:** Department of Radiology, the Regional Hospital of West Jutland, Holstebro, Denmark

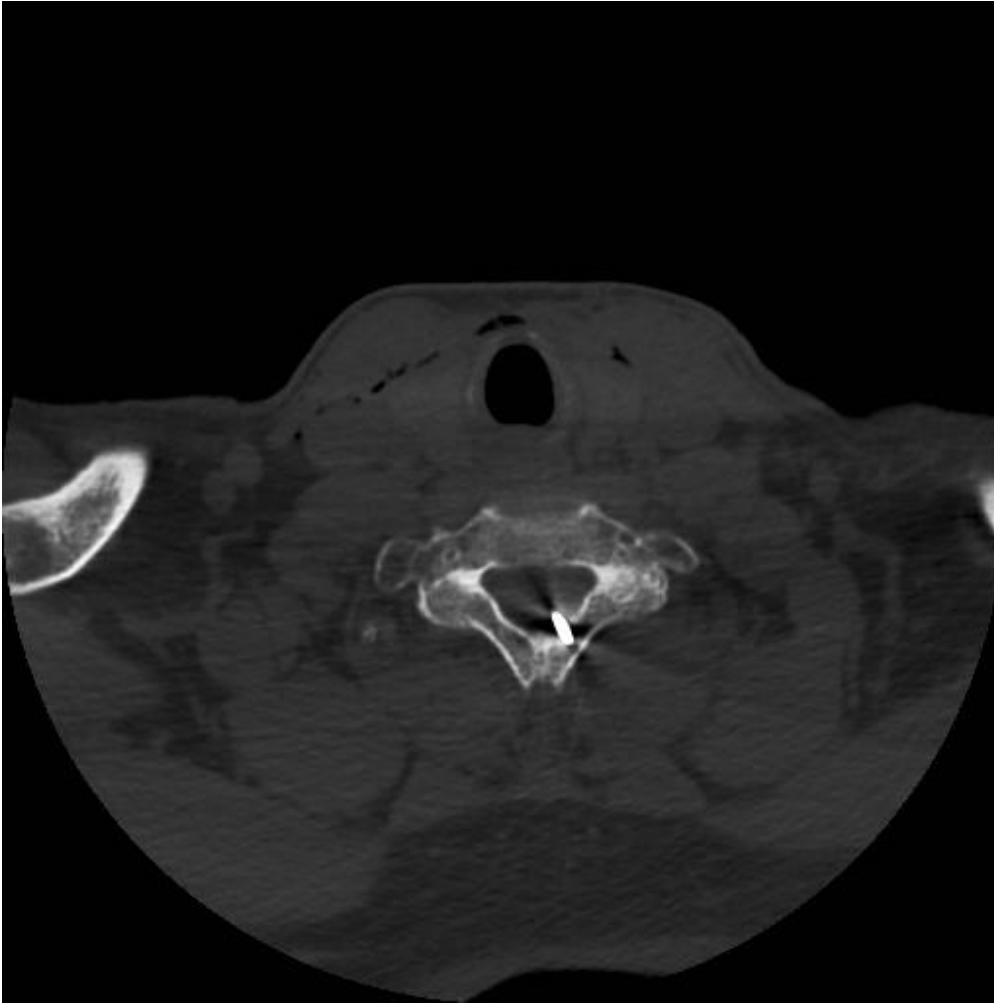
b



Description: Sagittal T1-weighted MRI images showing a distorting artefact at the C7 level implying the presence of a metallic foreign body. **Origin:** Department of Radiology, the Regional Hospital of West Jutland, Holstebro, Denmark

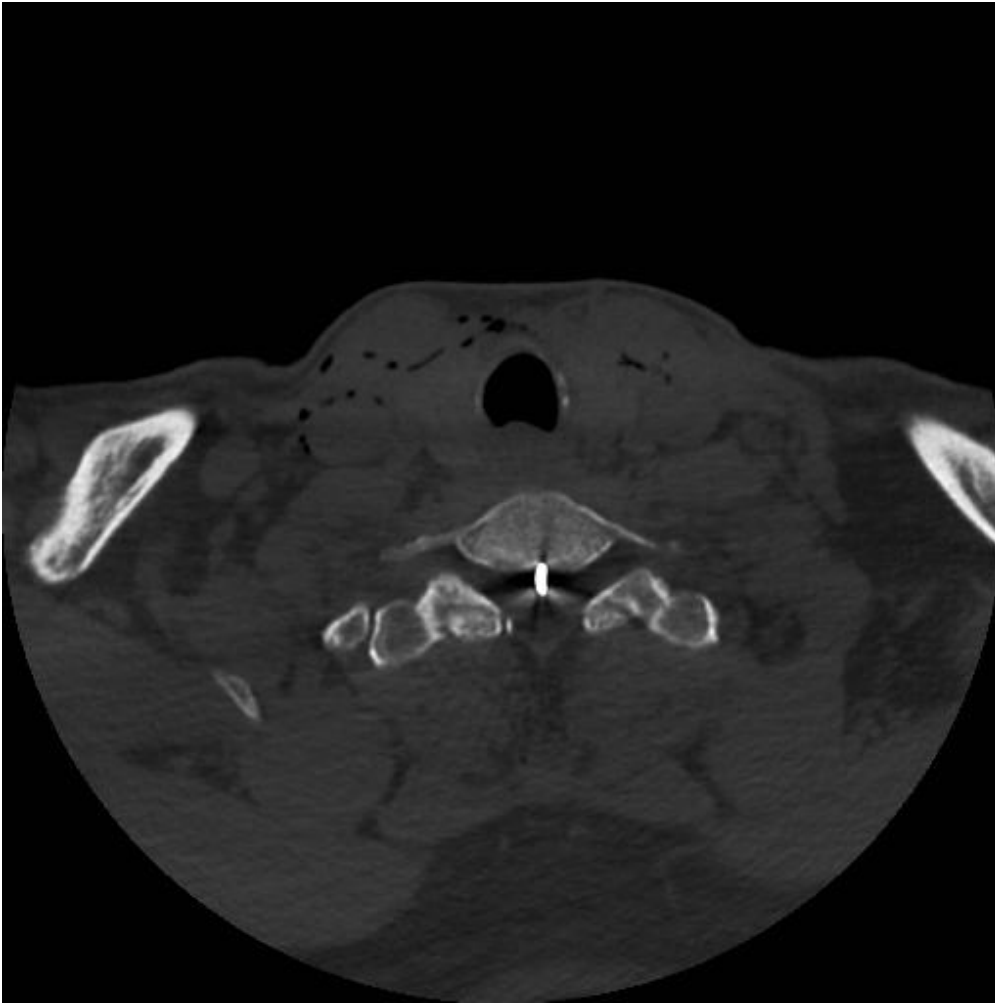
Figure 3

a



Description: CT scan of the cervical spine; axial images at the C7 level showing a metallic foreign body in the spinal canal. **Origin:** Department of Radiology, the Regional Hospital in West Jutland, Holstebro, Denmark

b



Description: CT scan of the cervical spine; axial images at the C7 level showing a metallic foreign body in the spinal canal. **Origin:** Department of Radiology, the Regional Hospital in West Jutland, Holstebro, Denmark

Figure 4

a



Description: Photo of the metallic foreign body after removal. **Origin:** Department of Radiology, the Regional Hospital of West Jutland, Holstebro, Denmark