

CASE REPORT

Cervical spine fracture in a patient with ankylosing spondylitis causing a C2-T9 spinal epidural hematoma- Treatment resulted in a rapid and complete recovery from tetraplegia: Case report and literature review

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ABSTRACT

Full recovery from tetraplegia is uncommon in cervical spine injury. This has not been reported for cervical spine fracture in a patient with ankylosing spondylitis causing spinal epidural hematoma. We report on a case of cervical spine fracture in a patient with ankylosing spondylitis who came with tetraplegia. He underwent a two stage fixation and fusion. He had a complete recovery. Two hours after the operation he regained full strength in all the limbs while in the Intensive Care Unit. He went back to full employment. There are only two other reports in the literature where patients with ankylosing spondylitis and extradural hematoma who underwent treatment within 12 h recovered completely from tetraparesis and paraplegia respectively. Patient with ankylosing spondylitis has a higher incidence of spinal fracture and extradural hematoma. Good outcome can be achieved by early diagnosis and treatment. This can ensure not only a stable spine, but also a rapid and complete recovery in a tetraplegic patient.

Key words: Ankylosing spondylitis, complete recovery, fracture, tetraplegia

Introduction

Spinal epidural hematoma is not common. This can be found in up to 50% for this group of patients with ankylosing spondylitis who have fractures.^[1] This patient had a C4 Chance fracture causing an extradural spinal hematoma from C5 to T9. The case highlights the urgency of diagnosis and treatment whereby a rapid and full recovery can be achieved from tetraplegia. There were two previous case reports where full neurological recovery from tetraparesis and paraplegia

occurred in the English literature by Garza-Mercado^[2] and Wu and Lee^[3] respectively. Full recovery from tetraplegia has not been reported for cervical spine fracture in a patient with ankylosing spondylitis causing spinal epidural hematoma.

Case Report

A 51-year-old man fell while alighting from the car at 10:00 am on the 25/1/2009. He went home where 1 h later he complained he could not move all his limbs. He arrived at 12:40 pm at the hospital with incomplete ASIA C4 tetraplegia. He only had sensation to pain down to the C5 on the left and C2 on the right. Light touch was preserved. There was hyporeflexia and lax anal tone. Computed tomography (CT) scan showed a Chance fracture through C4 body and the lateral masses. They are shown in Figure 1a (right C4 lateral mass fracture) and b (left C4 lateral mass fracture). There was also an epidural hematoma noted even on the CT scan from C2 to T9. This is shown in the sagittal cut as in Figure 2 (sagittal CT scan showing the epidural hematoma). The magnetic resonance imaging (MRI) confirmed an extensive epidural hematoma from C2 to T9. This is shown in Figure 3a (sagittal MRI of cervicothoracic spine showing the extradural hematoma dorsal to the cord) and 3b (axial MRI showing the same).

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He underwent operation 5 h later at 6 pm after the MRI scan. Operation was done with endoscopic intubation and cervical protection. He was turned with the cervical collar *in situ* and the head fixed in a Mayfield clamp.

Laminectomies were done at the cervical, cervicothoracic and thoracic levels to evacuate the epidural hematoma. Size 8 feeding tube was used to flush out the hematoma in between the areas of the laminotomies. Lateral mass plates were used to fix the spine from C3 to C5. He was put on a cervical collar. Two hours after the operation he regained full strength in all the limbs while he was in the Intensive Care Unit. However a week later he developed a posterior wound infection on the 1/2/2009. He was treated with antibiotics and wound dressing. Ten days later he had an anterior C4 corpectomy with C3-C5 fixation and fusion. The autologous iliac bone graft was placed between the superior and the inferior end plates of C4. The immediate postoperative X-ray is shown in Figure 4 (immediate postoperative lateral cervical spine X-ray). His posterior wound was treated with secondary suturing at the same time. He was able to walk with a walking frame on the 18/2/2009 and the urinary catheter was removed on the next day. He was discharged from the hospital on the 22/2/2009. Subsequently, he went back to his normal work.

Discussion

Spinal fracture in ankylosing spondylitis has different characteristics compared to those without. These include milder trauma, delayed diagnosis^[4] and more frequently affecting the cervical spine. Early diagnosis and treatment to get a complete recovery is strongly advocated.

Deterioration can occur during transfer^[5] or in the process of scanning. Moreover failure to recognize the primary fracture or occult fracture can occur up to 30% of cases.^[6] The severity of the spinal cord injury is usually greater with severe deficit occurring in 57 % of the cases. This is 3 times more common in patients with ankylosing spondylitis than those without.^[4] Treatment for the fracture alone was historically conservative and deteriorations were reported.^[7,8]

Recurrent dislocation in halo vest and implant failure with anterior approach alone suggested that anterior and posterior fixation would be the preference in the fixation

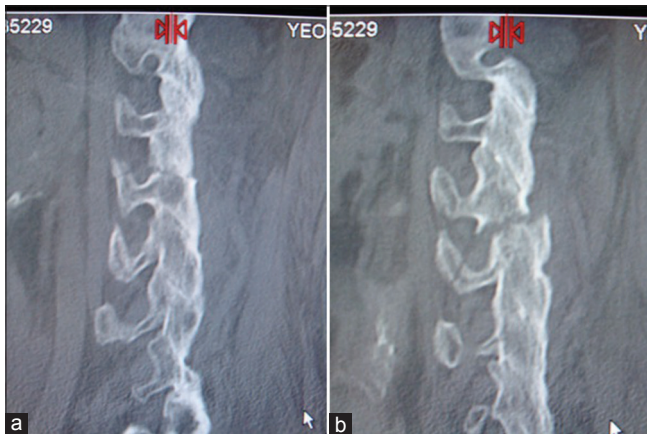


Figure 1: (a) Right C4 lateral mass fracture. (b) Left C4 lateral mass fracture

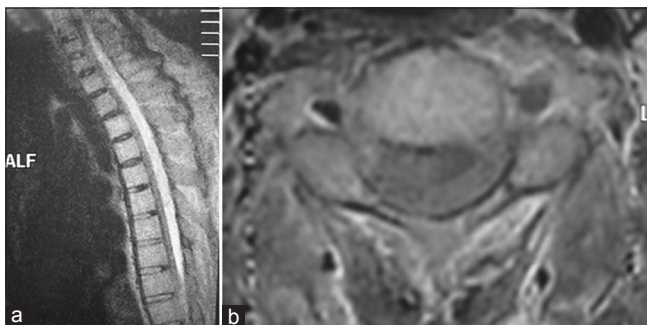


Figure 3: (a) Sagittal magnetic resonance imaging of cervicothoracic spine showing the extradural hematoma dorsal to the cord. (b) Axial magnetic resonance imaging scan showing the extradural hematoma



Figure 2: Sagittal computed tomography scan showing the epidural hematoma

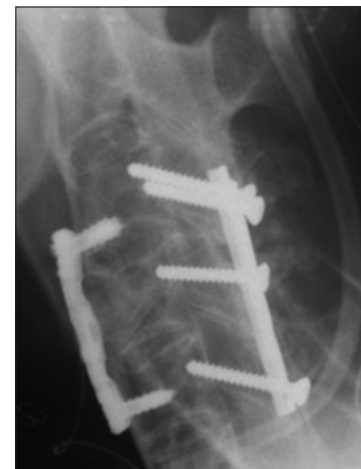


Figure 4: Immediate postoperative lateral cervical spine X-ray

of this highly unstable fracture.^[4,9] Current treatment involves evacuation, fixation and fusion. It was reported that anterior and posterior fixation has resulted in no failure.^[4] There are very few reported cases in the literature to have such a rapid recovery in the neurological function of within 2 h.

One of the difficulties we faced was the usual landmark for lateral mass screw insertion was absent due to fused facet joints. In this respect we used 14 mm screws to avoid nerve root injury as recommended by Taggard and Traynelis.^[10]

There was a mortality rate of 35% for this group of patients^[11] which is 2-times more than those spinal injuries without ankylosing spondylitis. Early series showed an operative mortality of 20%.^[10] Operative mortality in more recent series with the use of fixation was due mainly to pneumonia.^[4]

Extradural hematoma in patient with ankylosing spondylitis usually manifests as incomplete injury with rapid deterioration. The rate of neurological recovery falls by 50% if it is not evacuated within 36 h.^[9] There are only two other reports in the literature where patients with ankylosing spondylitis and extradural hematoma who underwent treatment within 12 h recovered completely from tetraparesis and paraplegia respectively. This case was operated within 6 h and regained normal strength within 2 h. This rate of recovery together with full recovery from tetraplegia has not been reported before.

Conclusion

Patient with ankylosing spondylitis has a higher incidence of spinal fracture and extradural hematoma. Good outcome can be achieved by early diagnosis and treatment. This can ensure

not only a stable spine, but also a rapid and complete recovery in a tetraplegic patient.

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