Ankylosed spines are prone to fracture

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SUMMARY

Fracture of an ankylosed spine is often overlooked. Because the force that damages an ankylosed spine is frequently slight, patients do not realize they are injured. Doctors can miss the fracture for the same reason and because patients already have a history of back pain. Plain radiographs sometimes fail to demonstrate the fracture site.

RÉSUMÉ

Chez le patient atteint d'ankylose de la colonne, la fracture d'une vertèbre passe souvent inaperçue. Puisqu'un traumatisme mineur peut fréquemment causer des dommages à une colonne ankylosée, les patients ne réalisent pas l'importance de leur blessure. Pour la même raison, les médecins peuvent manquer la fracture d'autant plus que ces patients ont déjà des antécédents de douleurs à la colonne. Les radiographies simples sont parfois incapables de mettre en évidence le site de la fracture.

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THE ANKYLOSED SPINE IS MORE prone to fracture than normal spines. This phenomenon has been reported in both ankylosing spondylitis and diffuse idiopathic skeletal hyperostosis.[1-7] Fractures are more common in patients with ankylosing spondylitis because of associated spinal osteoporosis.[1]

The force causing fracture of the ankylosed spine is often minor, and patients might be unaware that it seriously damaged the spine. If patients do visit physicians, the complication of spinal fracture could be overlooked because of the minor nature of the trauma and the patients' history of spinal pain. If the diagnosis is considered, plain radiographs of the spine might fail to demonstrate the fracture site.[1,2] The following case report illustrates these problems.

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Case report

A 43-year-old man with a 20-year history of ankylosing spondylitis had radiographic evidence of ankylosis of the entire spine. He slipped and fell in his kitchen; the next morning, he had no pain at rest, but on movement he had midthoracic pain. He was brought to the emergency department by ambulance and handled as if he had a spinal fracture. Examination showed no tenderness of the spine, and results of the neurological examination were normal.

Plain radiographs of the thoracic spine showed no definite abnormality (*Figure 1*). However, a radionuclide bone scan showed increased radionuclide uptake at the T8-9 level (*Figure 2*). Tomography at the T8-9 level demonstrated a fracture (*Figure 3*). Radiographs of the cervical spine, when compared with radiographs done 6 months previously, showed a fracture through the ossified anterior longitudinal ligament at the C5-6 level (*Figure 4*). No corresponding abnormality was seen on the radionuclide bone scan. The patient was treated conservatively for spinal fractures of the cervical and thoracic region, and at a 6-month follow-up examination, the fractures had healed with no neurological complication.

Figure 1. **Plain radiographs of the thoracic spine:** *A) Anteroposterior view, B) lateral view.*

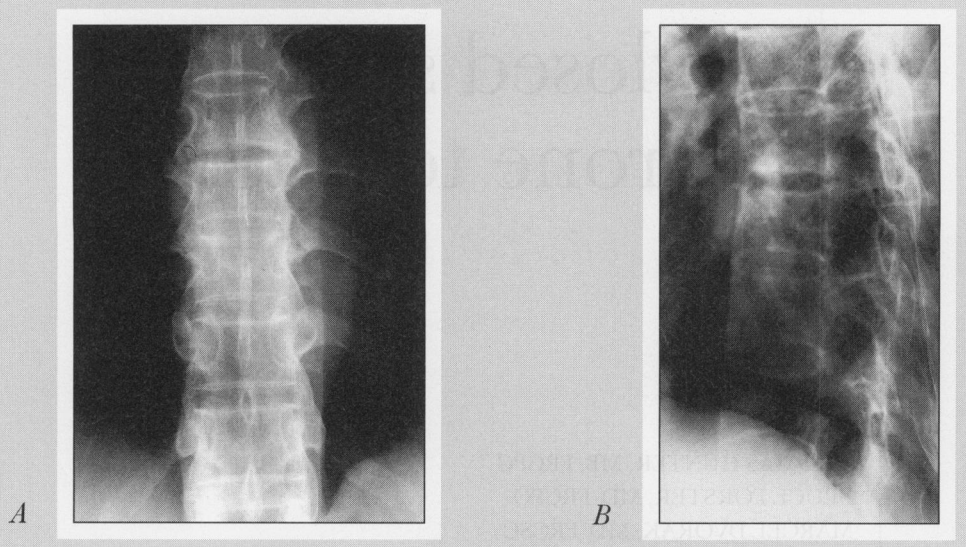


Figure 2. **Radionuclide bone scan showing increased uptake of radionuclide at the T8-9 level**

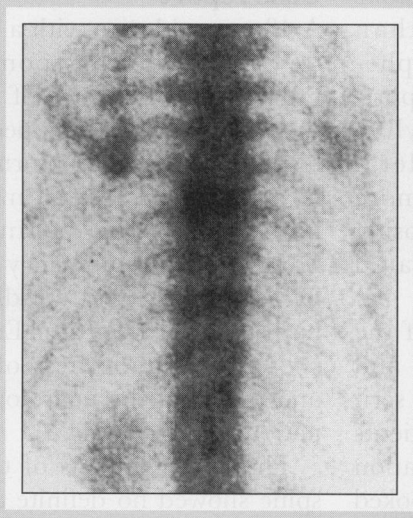


Figure 3. **Tomography of the thoracic spine showing a fracture at the T8-9 level**

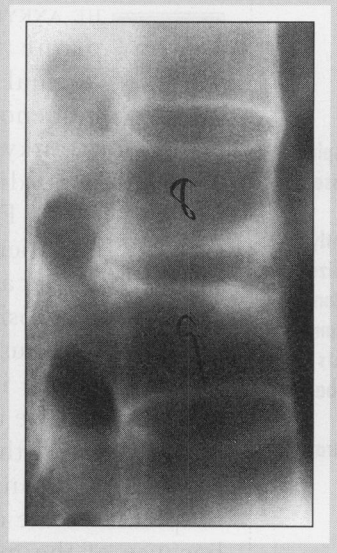
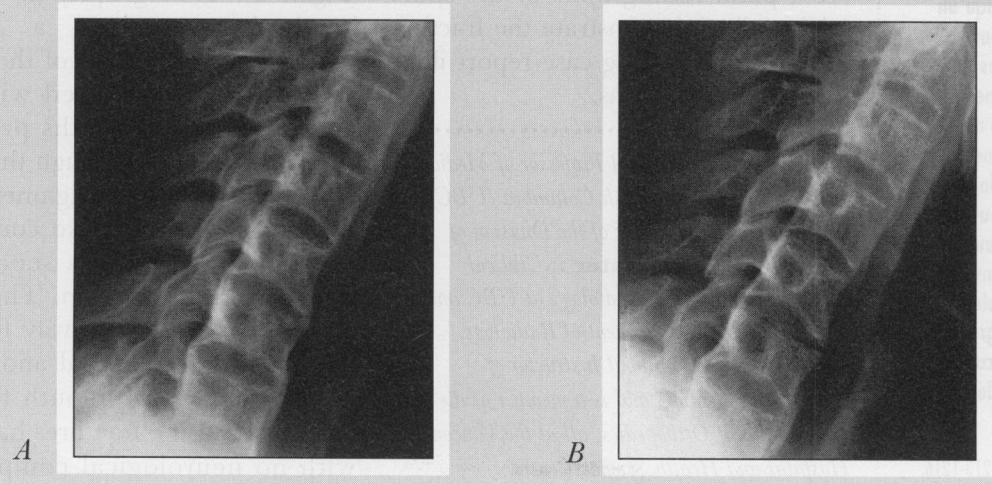


Figure 4. **Plain lateral radiographs of the cervical spine:** *A) Radiographs were taken 6 months before the fall and B) the day following the fall, showing a fracture through the ossified anterior longitudinal ligament at the C5-6 level.*



Discussion

This case illustrates many of the clinical features associated with spinal fractures in patients with ankylosing spondylitis. First, most patients have a history of chronic spinal pain followed by a pain-free period once the bony ankylosis has occurred. The redevelopment of mechanical spinal pain, precipitated or aggravated by activity and relieved by rest, should suggest a spinal fracture. In addition, patients might notice a change in posture or a change in their field of view. The fracture might occur at more than one level. If the fracture occurs in the thoracic region, patients must be watched closely, as laceration of the aorta could occur.[8,9]

The fracture might be difficult to see on plain radiographs, especially at the cervicothoracic junction, which could be the most common site of fracture in patients with ankylosing spondylitis.[1,2] Therefore, if the diagnosis is considered, patients should be managed as if they have a spinal fracture until other studies can be completed.

Radionuclide bone scanning is now available in many smaller hospitals and could help to locate the spinal fracture, which can then be confirmed by radiographic tomography (*Table 1*).[2]

Computed tomography (CT) is becoming increasingly available. As the fracture is often in the transverse plane and undisplaced, CT performed axially might miss the fracture depending on the slice thickness. Reformating the data into the sagittal plane might make such a fracture apparent.[10,11] However, plain film tomography, if available, might be just as useful.

Magnetic resonance imaging can also detect a radiographically occult spinal fracture, because of the associated bone marrow edema.[11] The fracture itself, however, is probably more visible with CT or tomography. Magnetic resonance imaging might also be helpful in diagnosing an epidural hematoma, which is more common in spinal fractures in patients with ankylosing spondylitis.[12] ■

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Table 1. **How to diagnose a fracture in an ankylosed spine**

Step 1. Suspect the diagnosis if there are:

- a history of direct or indirect trauma to the spine of even a mild degree (usually a simple fall),
- complaints of mechanical spinal pain precipitated or aggravated by activity and completely or partially relieved by rest, or
- a change in posture, including improved posture.

Step 2. Once the diagnosis is suspected, manage the patient as having an unstable spinal fracture until the diagnosis has been excluded. (Suspect that there might be more than one fracture site.)

Step 3. Perform radiographic examination of the spine.

Step 4. If the radiographs suggest a spinal fracture, confirm with computed tomography.

Step 5. If findings from radiographs are negative and if it is unclear which areas should be submitted to tomography, then a bone scan might help identify the fracture site.

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