

# Nontraumatic Fracture of the Thoracic Spine in Ankylosing Spondylitis

By ARMIN E. GOOD

**O**SSEOUS BRIDGING beneath the anterior spinal ligament is a feature of ankylosing spondylitis (AS). When extensive this is usually associated with ankylosis of the apophyseal joints, resulting in a poker spine, or virtually complete fusion of the bony structures. In 2 such cases, rupture or fracture of a calcified anterior thoracic ligament occurred following automobile accidents.<sup>1</sup> In each instance the involved interspace opened anteriorly without anterior-posterior displacement of the vertebrae. The present report of a thoracic interspace fracture in a rigid spine involved by AS is singular in that displacement of adjacent vertebral bodies occurred. More remarkable, no history of external trauma was obtained.

## CASE HISTORY

The patient, S.W.S., A.A. V.A.H. 0-5951, a 50-year-old unemployed clerk known to have had AS since 1946, entered the hospital on 11-14-65 with a chief complaint of chest pain.

Three weeks before admission, he was treated for pneumonia. Five days before admission he awoke at night choking in his secretions. To sit up immediately and expectorate, he threw his arms forward over his head, as was customary when he needed to propel his rigid trunk from supine to sitting position. During this unusually violent performance of the maneuver, he noted a crepitation in the spine for the first time in years and onset of a very severe, sharp, bilateral, lower dorsal pain. The pain soon encircled the lower thorax and was made worse by deep breathing and other movement.

Physical examination showed an afebrile, thin, middle-aged male whose respirations and truncal movement were guarded. The tenth dorsal spinous process was less prominent than normal and very tender. Bronchial breath sounds were heard over portions of the right lung field. There was slight

limitation of motion at the hip and shoulder joints. Moderate dorsal kyphosis and forward protrusion of the head were present. The entire spine was virtually immobile. He was able to turn his head 10° to either side.

The serum alkaline and acid phosphatase, calcium, and phosphorus were normal. The chest x-ray showed patchy densities throughout the left lung and the right lower lobe.

A lateral film of the dorsal spine showed squaring of the vertebral bodies and anterior interosseous bridging (syndesmophytes). There was fracture of the calcified anterior longitudinal spinal ligament at the D9-D10 interspace with anterior subluxation of D9, not seen on his most recent previous lateral chest film of 9-17-65 (Fig. 1a and 1b). Other films showed complete obliteration of the sacroiliac joints and ankylosis of the entire spine. In addition, there was resorption of bone from the anterior surface of C 5, 6, and 7.

The pulmonary findings were ascribed to resolving pneumonia, and the patient was treated with penicillin. A back brace did not control the pain, so it was necessary to apply a partial body cast, which promptly relieved his discomfort. Subsequently, the breath sounds became normal and x-rays of the lung fields became clear. The cast was removed after 2 months, at which time an x-ray showed formation of new bone bridging the D9-D10 interspace and restoration of normal apposition of the vertebral bodies (Fig. 2).

## DISCUSSION

Abdi in 1903 reported the case of a patient with a poker spine due to ankylosing spondylitis who developed paraplegia following fracture of the second lumbar vertebra during manipulation of a hip joint under anesthesia.<sup>2</sup> Abdi pointed out that because of rigidity of the entire spine in this disease, the likelihood of vertebral fracture occurring during a fall or other trauma was great. Another lumbar fracture

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Fig. 1a.—Lateral dorsal spine, 9/17/65, showing squaring of vertebral bodies, anterior interosseous bridging (syndesmophytes), and calcification along the anterior spinal ligament.

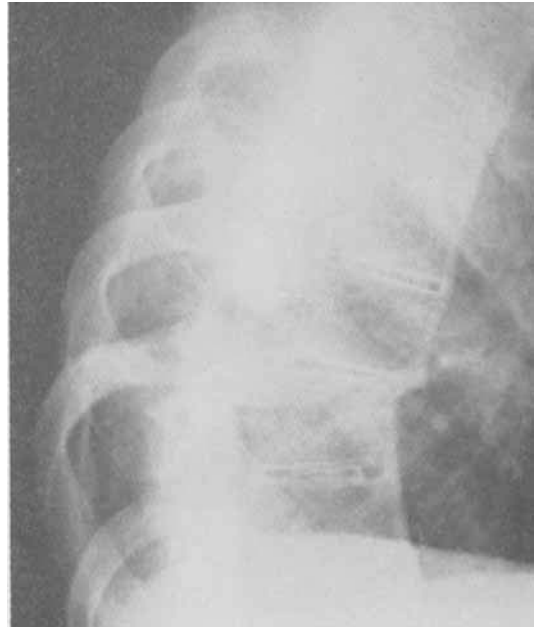


Fig. 1b.—Same, 11/14/65, showing anterior subluxation of D9 vertebral body.

in AS was reported by Wilkinson and Bywaters as a compression deformity in a severely porotic spine.<sup>3</sup>

Many cervical fractures have been reported in patients with AS, most commonly at the C 5-6 interspace. Four new cases and 34 previously published cases were discussed in a recent review.<sup>4</sup>

The spondylitis patient may be liable to fracture not only because of the brittleness of his inelastic, somewhat demineralized spine, but also because of occasionally advanced destructive changes. Dihlmann has recently reviewed the latter in detail, pointing out that destructive anterior spondylitis or spondylodiscitis may precede, parallel, or follow the more obvious new bone formation in AS. Destructive changes may be quite focal in an otherwise seemingly stable spine and may be inapparent

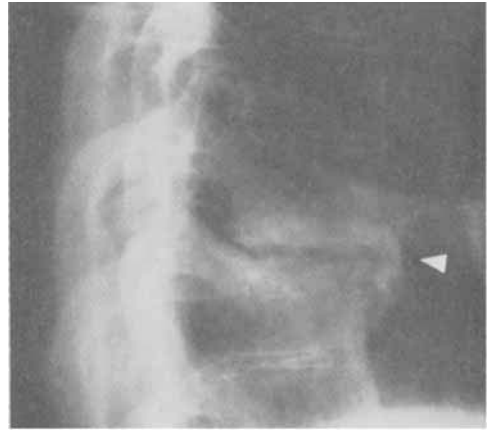


Fig. 2.—1/20/66, follow-up film showing new bone bridging the D9-D10 interspace (see arrow).

radiologically except by laminograms.<sup>5</sup> One obvious result of this destructive process, seen occasionally in the lateral films of the cervical spine in AS, is extensive anterior vertebral resorption of bone so that the cervical spine appears strikingly fragile.<sup>6</sup>

Our patient does have an appreciable share of this destructive anterior spondylitis, as evidenced by squaring of nearly all his vertebrae and particular loss of anterior bone at the lower cervical vertebrae. We did not, however, find radiographic evidence of a focal destructive process at the fractured D9-D10 interspace. Nevertheless, a small lesion can not be excluded, particularly in the absence of laminographic study.

Patients with AS are well known to suffer from episodic or chronic chest pain which is usually made worse by vigorous motion and relieved by guarding of thoracic motion.<sup>7</sup> Our experience with the present case illustrates the need for radiological examination of the involved spinal segment should the pain be unusually severe, be accompanied by crepitation, or follow a history of trauma.

#### SUMMARY

A patient with ankylosing spondylitis incurred a fracture in the dorsal segment of his rigid spine. There was no antecedent trauma except for the minor stress of sitting up forcibly in bed. No focal destructive changes were seen, though the patient did have prominent radiological evidence of anterior vertebral spondylitis.

#### SUMMARIO IN INTERLINGUA

Un patiente con spondylitis ankylosante suffreva un fractura in le segmento dorsal de su spina rigide. Nulle antecedente de trauma esseva presente, con le exception del stress minor de seder fortiatamente erecte in le lecto. Nulle destructive alterationes focal esseva notate, ben que le patiente exhibiva prominente evidentia radiologic de spondylitis antero-vertebral.

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