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Stress fracture of the sacrum

JEAN SCHILS,* MD, AND JEAN-PHILIPPE HAUZEUR,†‡ MD

*From the *Department of Radiology and the †Division of Rheumatology, Erasme Hospital, University of Brussels, Brussels, Belgium*

Stress fractures are common among military recruits, athletes, joggers, or dancers, where they occur predominantly in the lower extremities. The lumbar spine and the pelvis can also be affected.[1,5]

To our knowledge, this report describes the first case of fatigue-type stress fracture occurring in the sacrum.

CASE REPORT

The patient, a 40-year-old man who was running 80 km weekly, complained of the sudden onset of pain in the right lumbosacral area during his training. The pain did not disappear, despite a dramatic reduction in his training. Physical examination was normal except for pain on movement of the right hip.

A technetium methylene diphosphonate bone scan disclosed increased activity in the upper portion of the right sacral wing. Conventional radiographs (Fig. 1) revealed a vague, obliquely oriented area of increased density on the right side of the first sacral segment with interruption of the anterior margin of the foramen and surrounding a radiolucent line inferiorly. No other radiologic abnormality was identified in the pelvis, hips, or lumbar spine. A pelvic CT scan (Fig. 2) demonstrated the lesion in greater detail as a sclerotic zone extending from the anterior aspect of the sacrum to the anterior margin of the sacral foramen. The combined imaging findings were consistent with the diagnosis of a stress fracture. The hemogram, serum protein electrophorosis, sedimentation rate, and serum chemistry values were normal.

With complete cessation of athletic activity, the pain progressively disappeared over the ensuing 7 weeks and the patient subsequently resumed intensive jogging.

DISCUSSION

Fatigue-type stress fractures are a well-known complication of intense sports activity, especially among athletes and military recruits. The differential diagnosis should include insufficiency-type stress fractures, which occur when the mechanical or elastic resistance of a bone is abnormal.[2] In our case, metabolic bone disease, including osteoporosis and osteomalacia, as well as osseous neoplasms could definitively

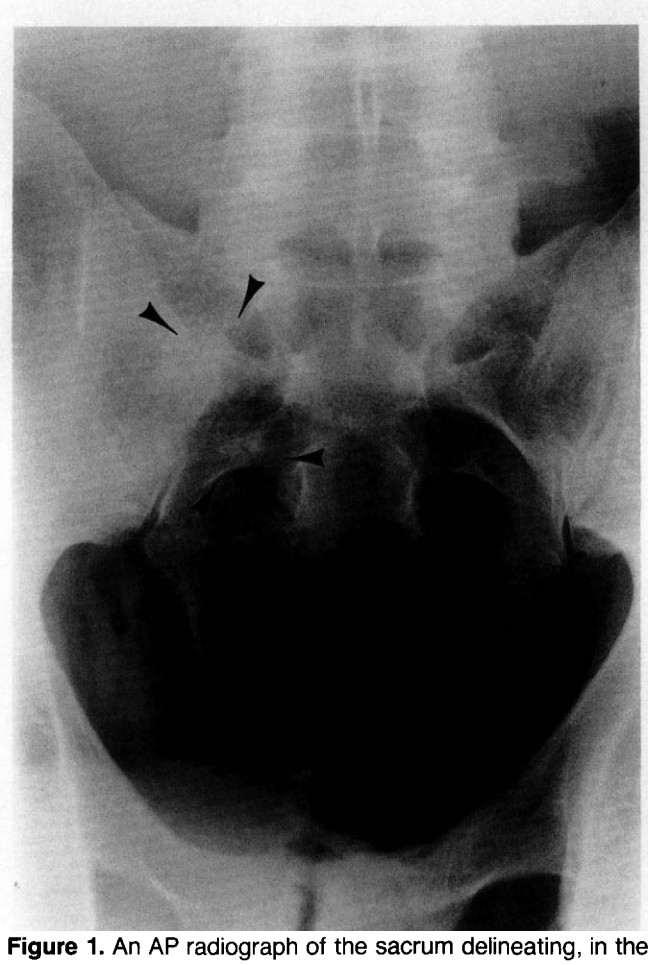

Figure 1. An AP radiograph of the sacrum delineating, in the right upper part, an area of increased density with interruption of the anterior margin of the first foramen (upper arrows) and surrounding a radiolucent line inferiorly (lower arrows).

‡ Address correspondence and reprint requests to: Jean-Philippe Hauzeur, MD, Division of Rheumatology, Erasme Hospital, 808 Route de Lennik, 1070 Brussels, Belgium.

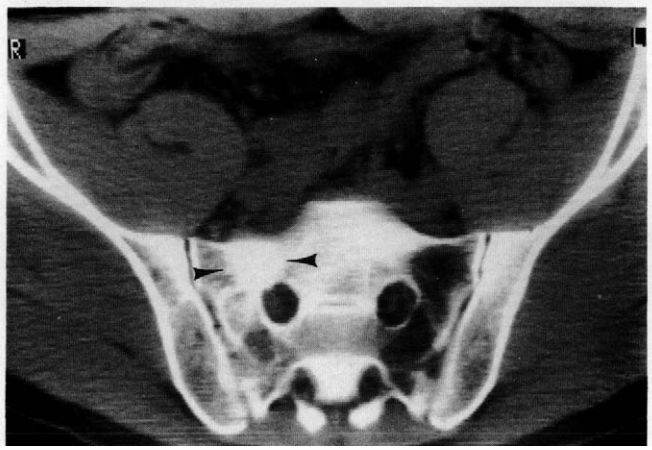

Figure 2. Pelvic CT scan with bone window showing a sclerotic zone extending from the anterior aspect of the sacrum to the foramen (arrows).

be excluded, and there was no history of previous pelvic radiation.

From our literature review, it appears that this is the first reported case of a fatigue-type stress fracture involving the sacrum. Only one prior description at this site has been presented, by Milgrom et al.,[6] in a patient with 13 such lesions. Other reports of stress fractures in the sacrum have involved patients suffering from osteoporosis or with a history of pelvic radiotherapy,[3,4,7] but such fractures are of the insufficiency type.

The cause of both types of stress fractures appears to involve an imbalance between the strength of a bone and the mechanical stress applied to it.[3] Because only insufficiency-type stress fractures have been previously reported in the sacrum, this bone seems to be relatively resistant to intense stress, except in situations where bone strength is diminished.

It remains unclear why our patient proved to be an exception to this rule. On physical examination, no stiffness of muscles involved in sacral motion (iliacus, piriformis, erector spinae, biceps femoris) or abnormal movement during ambulation was identified. It is possible that the reported frequency of fatigue-type sacral stress fractures among athletes would be greater if radionuclide studies were systematically performed in the setting of activity-related low back or hip pain.

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