Radiology for the surgeon

Musculoskeletal case 33

Presentation

A 36-year-old woman with a complaint of pain and weakness in her shoulder was referred to an orthopedic surgeon. She had no recent history of trauma, but had fallen some 9 months previously on her outstretched hand, injuring her shoulder. Plain radiographs taken at that time were normal.

Under physical examination, she was focally tender around her distal clavicle and acromioclavicular joint, and reported a vague sensation of fullness.

Plain radiographs revealed resorption of the distal clavicle and irregularity of its acromial surface (Fig. 1). Axial computed tomographic imaging confirmed these findings and that the acromion was normal (Fig. 2).

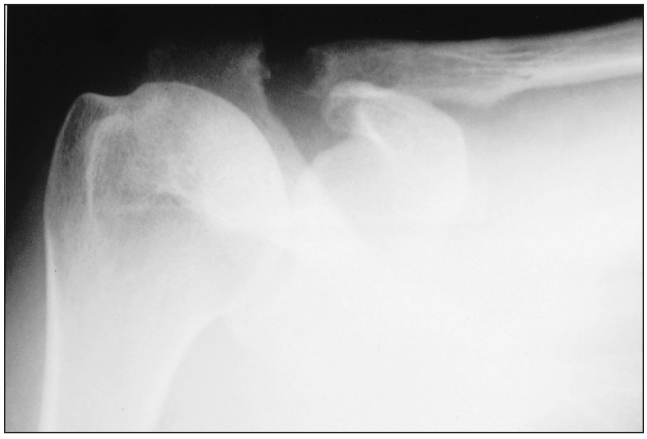

FIG. 1: Plain radiograph.

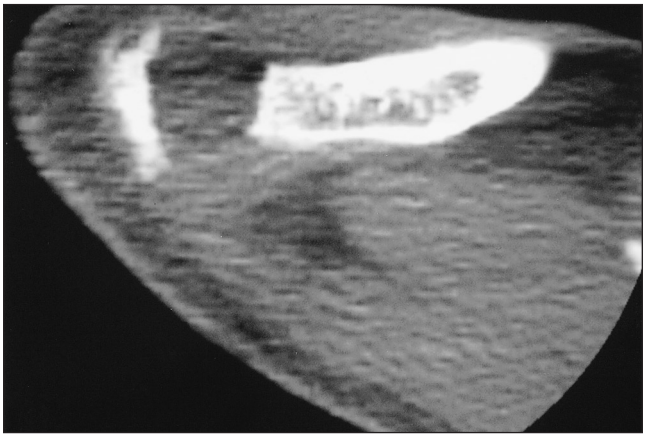

FIG. 2: Axial computed tomographic image.

Submitted by Ronan S. Ryan, MD, and Peter L. Munk, MD, Department of Radiology, Vancouver General Hospital, Vancouver, BC

Inquiries about this feature should be directed to the section editor: Dr. Peter L. Munk, Professor, Department of Radiology, Vancouver General Hospital and Health Sciences Centre, 899 W 12th Ave., Vancouver BC V5Z 1M9; fax 604 875-4723; plmunk@interchange.ubc.ca

Diagnosis

Post-traumatic osteolysis of the clavicle

Osteolysis of the distal (acromial) end of the clavicle is a well described, painful abnormality that may develop after an acute traumatic injury to the shoulder.[1] The condition is also known to occur secondary to repeated microtrauma, particularly in weightlifters.[2]

Symptoms are usually those of pain and a sense of weakness during abduction and flexion of the arm, and may occur any time from weeks to years after the traumatic episode. Upon clinical examination, crepitus and swelling of the overlying soft tissue may be detected.[3]

Early in the disease process, radiographs may reveal focal soft-tisue swelling, clavicular osteopenia and loss of subarticular cortex in the distal clavicle. With progression of the osteolysis there is resorption/erosion of the distal 0.5–3 cm of the clavicle.[4] Interestingly, bone loss in any case reported has never exceeded 3 cm, and remnants of bone may remain between the acromion and clavicle.[3] Bone scintigraphy results are positive during the lytic phase.[2]

Pathogenesis is unclear. Hypotheses include autonomic nervous system disturbance with consequent alteration of the blood supply to the bone (supported by the presence of pupillary inequality in some patients, with the larger pupil on the same side as the lesion), reactive hyperemia, reactive synovitis, stress fractures and avascular necrosis of the bone.[2,4]

The diagnosis is beyond question if a radiograph taken at the time of the injury shows no bone loss. Other conditions causing loss of the outer third of the clavicle include rheumatoid arthritis, hyperparathyroidism and scleroderma, but none of these should cause any diagnostic difficulty.

In cases such as this that are secondary to repetitive microtrauma, cessation of the inciting activity often results in relief of symptoms and even partial or complete osseous restoration of the clavicle. Resection of the distal clavicle may be offered to those patients who are unable or unwilling to do this and in cases of failed conservative management. This relieves symptoms and does not appear to interfere with continued physical activity.[5] Local corticosteoid injections and oral anti-inflammatory agents have shown poor results as therapeutic modalities in this condition.[2]

Competing interests: None declared.

References

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