Case report 448

Martha C. Nelson, M.D.¹, Anne C. Brower, M.D.¹, and Bruce D. Ragsdale, M.D.²
Departments of ¹ Radiology and ² Pathology, Georgetown University Hospital, Washington, D.C., USA

Radiological studies

Fig. 1. A "coned-down" anteroposterior view of the left middle thoracic region (ribs 4-8) shows the 6th rib to be hyperostotic, with a 1 x 0.5 cm lucent lesion within the center of the hyperostotic zone. A fairly large calcific or ossific fleck is noted in the center of the lucency. The adjacent ribs also are hyperostotic.

Fig. 2. A "coned-down", oblique view of the same area shows pleural thickening along the left lateral chest wall.

Clinical information

This 15-year-old boy was seen by his physician for dull, aching pain in the left thorax in its middle third. The pain was constant and localized to the left lateral chest wall. Physical examination demonstrated tenderness over the left lateral rib cage. Dullness to percussion and decreased breath sounds were noted over the same area. All laboratory studies were normal.

Roentgenograms showed a markedly hyperostotic left sixth rib with a 1.0 x 0.5 cm radiolucent lesion in the middle of the hyperostosis. A dense fleck of calcium and/or bone was noted within the center of the radiolucency. The two adjacent ribs, the one above and the one below, showed thickened hyperostotic reaction along the edges apposed to the sixth rib, extending the same length as the involved portion of the sixth rib (Fig. 1). An oblique film revealed pleural thickening adjacent to the involved rib (Fig. 2).

The affected portion of the left sixth rib was excised surgically.

Address reprint requests to: Martha C. Nelson, M.D., Department of Radiology, Georgetown University Hospital, 3800 Reservoir Road, N.W., Washington, D.C. 20007, USA
Diagnosis: Osteoid osteoma of left 6th rib with inflammatory reaction in the adjacent pleura and hyperostosis of the adjacent ribs

The differential diagnosis primarily included chronic osteomyelitis (Brodie abscess), eosinophilic granuloma, healing fracture and fibrous dysplasia.

Histological and pathological studies demonstrated the changes of an osteoid osteoma (Fig. 3 A-C). Follow-up films after a 3 month interval showed the post-surgical resection of the sixth rib. The adjacent sclerotic ribs had lost some of their sclerosis and the pleural reaction had disappeared.

Discussion

The lesion of osteoid osteoma, first defined by Jaffe in 1935 [3], is classified as a neoplasm with inflammatory characteristics. Its clinical presentation and radiographic changes suggest an inflammatory lesion, but its histological features classify it as a neoplasm.

The inflammatory characteristics of an osteoid osteoma are demonstrated radiographically when a bone adjacent to the osteoid osteoma-bearing bone responds with periostitis. This change has been reported in the ankle, wrist, and digits. Moberg (1952) [5] described an osteoid osteoma of the fourth metatarsal head with periosteal thickening of the adjacent third metatarsal and proximal phalanx of the fourth digit. Morton and Bartlett (1966) [3] described three osteoid osteomas causing adjacent periostitis. One in the ulna produced marked periosteal new bone on the adjacent border of the radius. Another osteoid osteoma was present in the distal end of the radius with periosteal new bone in the adjacent area of the ulna [6]. The third lesion located in the talus, produced periosteal response in the adjacent medial malleolus. Sankaran (1954) [7] stated that reactive proliferation was noted in the fibula adjacent to an osteoid osteoma in the mid tibia.

When the osteoid osteoma is located near a joint, or is intra-articular, it again manifests its inflammatory nature. Radiological and pathological changes, consisting of synovitis and bony erosion, have been reported by Dahlin and Johnson [1] and Snarr and Abell [8]. All the bones within a joint may show sclerosis or periosteal response.

The occurrence of an osteoid osteoma in a rib is extremely rare. Only two cases have been reported in the literature (Jackson in 1953 and Mauer in 1958) [2, 4]. Neither report described changes in adjacent ribs or evidence of a pleural reaction. We reviewed 125 cases of osteoid osteoma collected from the literature subsequent to our case. Only two were found in the rib and again neither had reaction in the adjacent rib or in the underlying pleura.

The diagnosis of osteoid osteoma in our patient was suggested by the clinical presentation as well as the radiographic findings. Absolute diagnosis was and can only be made by surgical excision and histological demonstration of the nidus. This case presents another manifestation of the inflammatory characteristics of osteoid osteoma – namely, the production of secondary pleuritis.

In summary, a case is presented of a 15-year-old male with an osteoid osteoma of the left sixth rib that contained a single nidus but showed inflammatory involvement of two adjacent ribs and development of a focal area of pleural reaction. After surgical excision, the adjacent ribs showed diminution in the secondary hyperostotic changes and the pleural reaction had disappeared. Such features, secondary to an osteoid osteoma, were discussed in detail and the literature on the subject was reviewed.

References