



Osteoid osteoma of the cuboid bone: a rare cause of foot pain

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Osteoid osteoma, a common bone lesion of benign nature, is more rarely seen in feet. It most commonly involves the talus yet rarely the cuboid. The atypical symptoms of foot involvement may delay the diagnosis. Differential diagnosis most commonly includes ankle sprain, monoarticular arthritis, anterior impingement syndrome, tarsal spur, osteomyelitis, stress fracture, eosinophilic granuloma. The delay in diagnosis and treatment of osteoid osteoma in the foot may be a cause of chronic foot pain. In this study, we present a 17-year-old boy with osteoid osteoma in his right cuboid bone. The patient was undiagnosed during the first year of his symptoms. After surgical removal of the tumor, his complaints were resolved. The pathological examination confirmed the diagnosis of osteoid osteoma. Osteoid osteoma is an unusual bone tumor of the foot. It should be included in the differential diagnosis of patients exhibiting foot pain. In speculative cases with no obvious radiographic findings, further imaging studies, such as CT, should be considered.

Key words: Cuboid bone; foot pain; osteoid osteoma.

Osteoid osteoma is a benign osteoblastic tumor, constituting 10-20% of all benign bone tumors. It rarely occurs in the foot (4% of all cases).^[1,2] While the talus is the most frequently affected bone, other tarsal bones are rarely involved. Seventy-five percent of patients exhibit subperiosteal localization. Children and young adults are more affected and the male to female ratio has been reported as 4:1.^[1,2]

Patients usually have nocturnal aggravating pain which respond to aspirin or other non-steroidal anti-inflammatory drugs well. The pain is generally not associated with trauma. The diagnosis may be more

difficult in patients with a history of trauma. It most frequently appears in juvenile cases, although it may also be seen in all age groups.^[3-5]

In this study, we present a patient with osteoid osteoma in his right cuboid bone.

Case report

A 17-year-old male patient, presented with right foot pain and swelling, specifically in the lateral aspect of his foot. He had no concurrent medical condition. Several disorders, including tendinitis and infection were considered in the differential diagnosis and con-

servative treatment was given. The patient stated that his nocturnal pain was no longer responsive to non-steroidal and anti-inflammatory drugs.

Upon physical examination, the cuboid bone was tender during palpation. The AOFAS ankle-hindfoot score was 24. Routine blood tests showed a CRP level of 5.92 mg/dl and white blood cell count of 9920/ml. No abnormality was found in plain radiographs (Fig. 1). Computerized Tomography (CT) scans revealed images suggesting osteoid osteoma, located in the cuboid bone subperiosteally (Fig. 2). On Magnetic Resonance Imaging (MRI) there was a diffuse medullar edema in the cuboid bone (Fig. 3). Radionuclide Scan exhibited a substantially increased uptake in the late phase at the same localization (Fig. 4). All of these findings were consistent with osteoid osteoma.

The patient underwent surgical excision. The surgery was performed with a minimally invasive approach, using fluoroscopic assistance. The lesion was brown and 0.5 cm in diameter. It was located near the calcaneocuboidal joint on the cuboid bone (Fig. 5). The Burr-Down technique was thoroughly performed to excise the lesion, and grafting was not required. After the surgery, a short leg walking cast was applied. One month after surgery, the cast was removed and full weight-bearing was allowed. The histopathological examination of the excision material confirmed the diagnosis of osteoid osteoma.

One year after the operation, the patient had complete resolution of his complaints. On his last visit, he had no pain, could walk for 4 blocks, and had no limping. His AOFAS score increased to 90.

Discussion

Osteoid osteoma, a frequently seen benign bone tumor, is rarely seen in feet.^[1,4,6-8,9] It accounts for 10-12 percent of all benign bone lesions. This tumor involves feet in only 4% of these cases.^[4] The most common site of involvement in feet is the talus, whereas cuboid localization is rare. Its diagnosis may be difficult and delayed up to 10 years.^[1] Differential diagnosis usually includes ankle sprain, monoarticular arthritis, anterior impingement syndrome, tarsal spur, osteomyelitis, stress fracture and eosinophilic granuloma, which may complicate the diagnosis.^[3] In our case, we had a 1 year delay before



Fig. 1. No abnormality was detected on the plain radiograph.

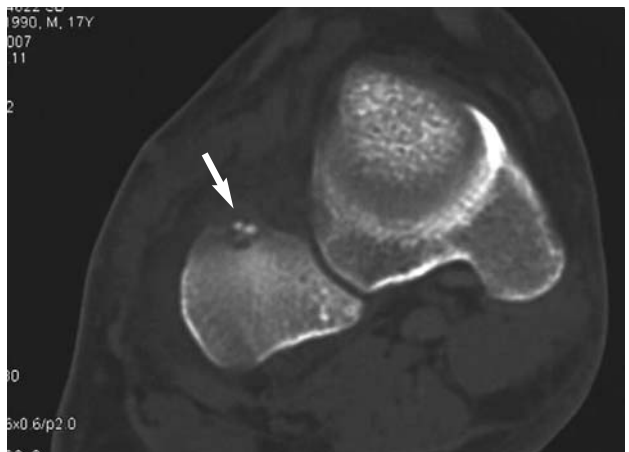


Fig. 2. CT scan of the right foot. Note the subperiosteal lesion in the cuboid (arrow).

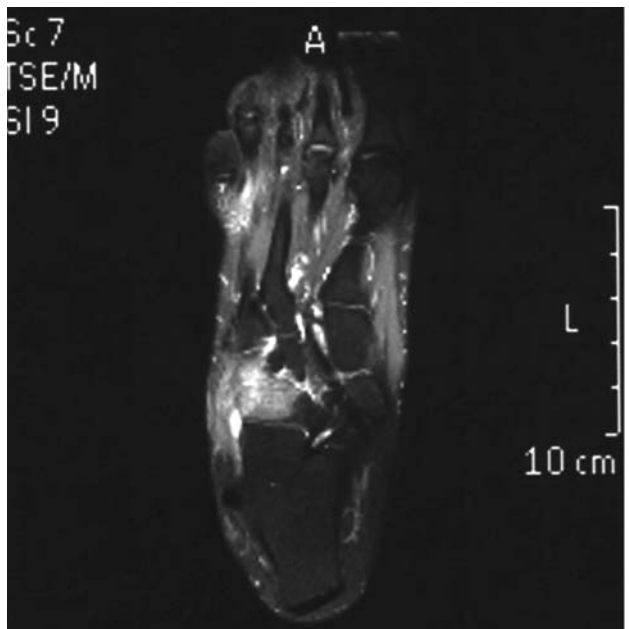


Fig. 3. MRI showed diffuse edema in the cuboid.

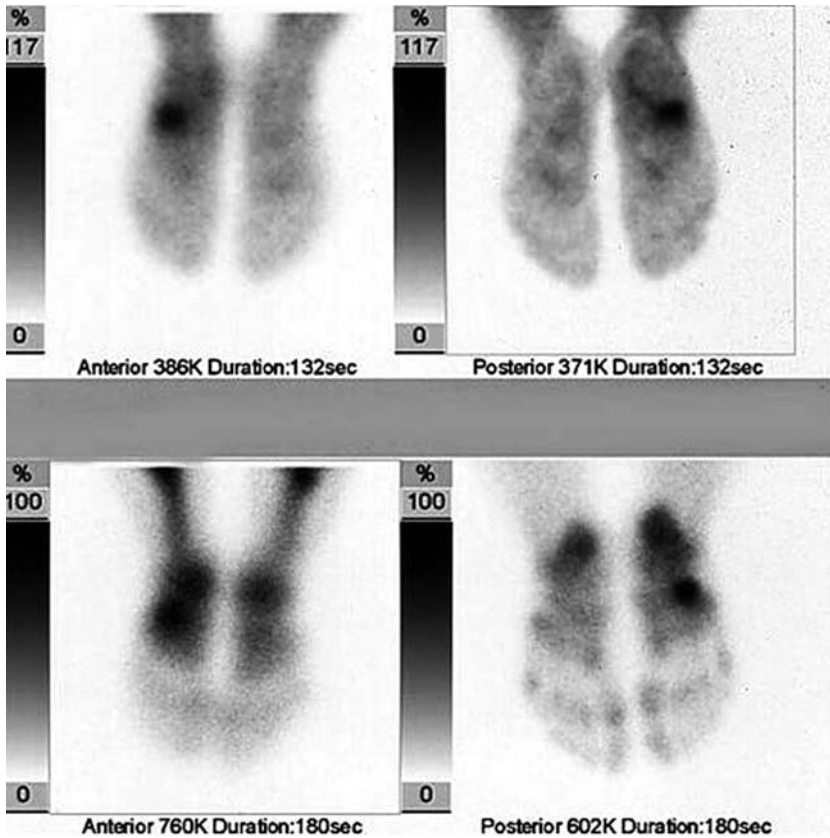


Fig. 4. There was an increased activity on radionuclide scan.

the correct diagnosis. CT is a sensitive imaging technique in revealing 0.5 to 1 cm sized radiolucent nidus, the typical feature of osteoid osteoma. MRI may not be so effective in the diagnosis, because it overestimates the medullary or periosteal edema,

mimicking a malignant lesion. Radionuclide scan shows increased uptake in the late phase. While all of these findings may suggest osteoid osteoma, its definitive diagnosis can only be made after histopathologic examination (Fig. 6).



Fig. 5. Intraoperative photograph showing the lesion in the cuboid (arrow).

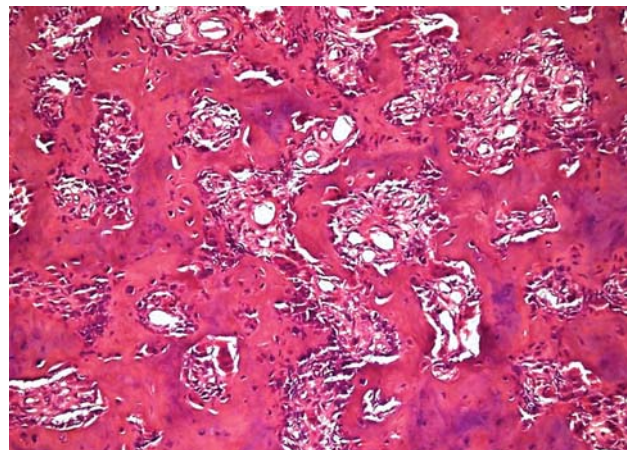


Fig. 6. Low-power photomicrograph. Note the bone sclerosis and small focus of immature bone with osteoblasts and osteoclasts, separated by fibrous and vascularized medullary tissue (H-E x20). [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

AOFAS is a current scoring system for the assessment of foot pathologies. Of the 100 total points, 40 is devoted to pain, 50 to functional assessment, and the remaining 10, to foot alignment. A higher score suggests a better clinical status.^[7]

Complete surgical excision of the nidus is the preferred treatment method for osteoid osteoma. Percutaneous ablation is a minimally invasive treatment alternative, also used for osteoid osteomas in feet.^[9,11] This procedure is performed under CT assistance. In our case, since we had no sufficient experience with this technique, we used the Burr Down technique.^[10]

Osteoid osteoma is an unusual bone tumor of the foot. It should be included in the differential diagnosis of the patients with foot pain. In speculative cases with no obvious radiographic findings, further imaging studies, such as CT, should be considered.

Conflicts of Interest: No conflicts declared.

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