



A case of osteoid osteoma in the distal radius epiphysis with atypical onset

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We present a 16-year-old male patient, with a history of wrist trauma 3 months prior to admission, presented with widespread swelling, limitation of motion and pain that was unresponsive to anti-inflammatory drugs in the left wrist. A lesion compatible with osteoid osteoma in the distal epiphysis of the left radius was detected radiologically. Diagnosis of osteoid osteoma was confirmed with pathological examination of the lesion. Differential diagnosis is important as the atypical lesion occurred after trauma, making it difficult to distinguish from synovitis and infection in consideration of its location.

Key words: Distal radius fracture; epiphyseal fracture; osteoid osteoma.

Osteoid osteoma is a well common benign bone tumor. While the lesion is frequently seen in the femur and tibia, it may also be seen in various bony locations. The relationship between osteoid osteoma and trauma is controversial.

In this case report, we present a patient who developed an osteoid osteoma in the distal radial epiphysis, following a wrist injury.

Case report

A 16-year old male presented at the polyclinic with pain, swelling and limited movement in the left wrist. Three months prior to admission, the patient had undergone short arm splint therapy for 3 weeks for soft tissue trauma resulting from left wrist trauma. Sensitivity and pain increasing at night at rest began in the left wrist 4 weeks following the trauma and the patient was followed-up with various anti-inflammatory medications and cold

therapy. Examination of wrist radiographs taken after trauma showed a radiolucent line within the radius distal epiphysis extending to the physis not related to the joint, possibly denoting a fracture without distinct separation (Fig. 1a).

Physical examination revealed widespread edema and sensitivity around the radial styloid which restricted wrist movements (Fig. 1b). The most recent radiograph showed central radiolucent sclerosis around the area close to the radius distal epiphysis styloid which could be clearly distinguished from the surrounding structures (Fig. 1c). While the sedimentation, CRP and white cell values were normal, thin-section CT, MRI and whole body bone scintigraphy tests were conducted to evaluate the lesion in more detail. On CT, a mass 8x8 mm in size was found with central sclerosis, surrounding radiolucency and sclerotic bone tissue surrounding this structure at the outer limits. These characteristics conformed

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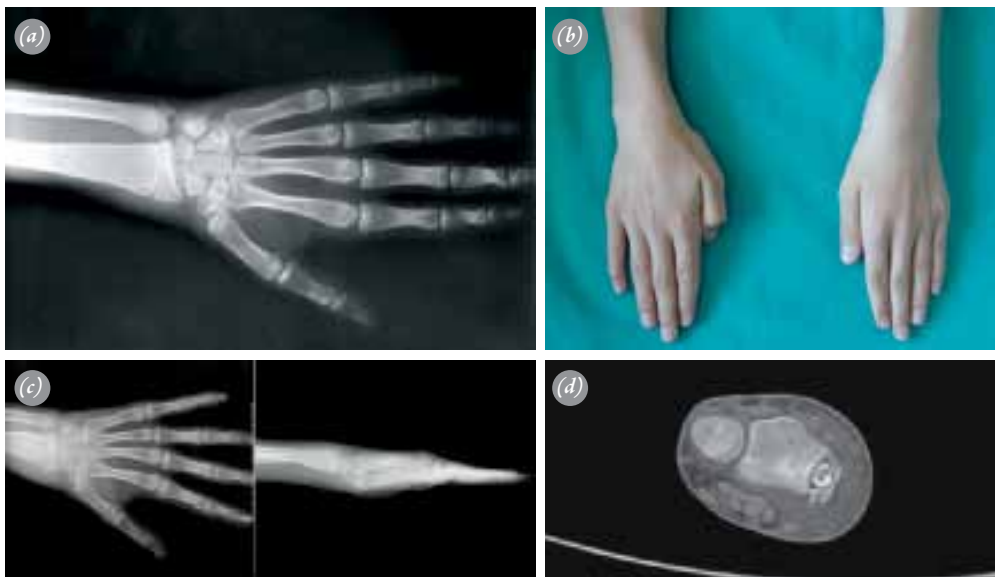


Fig. 1. (a) Radiograph from the initial trauma. (b) Edema at the radial styloid of the left wrist. (c) Radiograph taken 3 months after trauma. (d) Computerized tomography view showing a mass of 8x8 mm with central sclerosis. [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

with osteoid osteoma (Fig. 1d).

On the MRI evaluation, widespread edema in the surrounding soft tissue of the wrist, along with the lesion, were consistent with osteoid osteoma (Fig. 2a-c). Follow-

ing the atypical development of the case post-trauma, CT and MRI images were reevaluated by different radiologists unaware of the primary diagnosis. Diagnosis of the lesion as primarily consistent with osteoid osteoma



Fig. 2. Magnetic resonance images of the mass. (a) T1-weighted coronal scan. (b) T1-weighted axial scan. (c) T2-weighted axial scan. (d) Scintigraph showing increased activity involvement at the distal end of the left radius. (e) Mobile mass removed during surgery. Removal of the mass was performed after lifting the cortical bone like a lid. [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

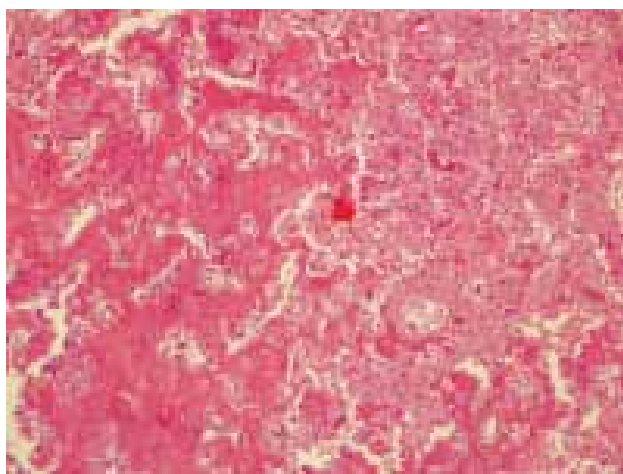


Fig. 3. The pathological examination of the slides revealed anastomosing woven bone trabeculae with osteoblasts and new bone formation. [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

required confirmation by pathological examination. Full body bone scintigraphy, conducted at another center unaware of the initial diagnosis, showed increased activity involvement in the bleeding and blood pool images of the left wrist compared to normal values and the right wrist. Additional images taken after 3 hours displayed increased activity involvement generally in the left wrist and focally in a small area at the distal end of the left radius. Although the image was not specific, it was determined to be consistent with osteoid osteoma (Fig. 2d).

Treatment was started with 500 mg aspirin daily for one week. After 2 days, the night pain had receded and with an initial diagnosis of osteoid osteoma, the decision for surgical treatment was taken. The patient underwent surgery under general anesthesia with a tourniquet. Taking the localization on the radius distal end CT as the basis, a longitudinal incision was made on the lateral and volar surface. With visualization of the first dorsal compartment, retraction was made to the dorsal. The cortical bone was lifted like a lid and the mass was removed with the aid of fluoroscopy over the mass (Fig. 2e).

Pathological evaluation revealed osteoblasts combining together around the osteoid, vascular structures between osteoid tissue, fibroblasts, osteoblasts and loose connective tissue forming from a small number of osteoclast type giant cells, consistent with osteoid osteoma. Due to the atypical initial history of the lesion, slides were sent to another pathologist blinded to the initial diagnosis for reevaluation and confirmed to be consistent with osteoid osteoma (Fig. 3). Following surgery, all patient complaints were resolved and wrist function returned to normal.

Discussion

Osteoid osteoma is a lesion which accounts for 10% of benign bone tumors containing osteoblastic properties.^[1] In addition to the frequently seen localizations of the femur and tibia, atypical locations in any bone of the body may develop.^[2,3] Cases of osteoid osteoma seen in the distal radius are less than 1%.^[4] The case presented here had atypical onset following trauma. In addition, the radius styloid is a rarely seen location.

In the literature, the relationship between osteoid osteoma and trauma is controversial. Jaffe reported that this tumor was not related to trauma or infection.^[5] In contrast, Barron et al. reported 12 cases of osteoid osteoma following trauma in 1992.^[6] Leonhardt et al. reported a case of osteoid osteoma which developed on a 19 years old tibial fracture line.^[7] Rotzer et al. reported a case of osteoid osteoma in the first finger phalanx following trauma.^[8] More recently, Yang et al. reported a case of osteoid osteoma determined in the calcaneus following ankle ligament injury.^[9] In addition, Adil et al.^[10] reported cases of osteoid osteoma developing postoperatively. The authors stated that the post-traumatic osteoid osteoma was reported to have occurred following the invagination of a K-wire in the periosteum bone during surgical procedures and through bone reduction. Neither closed reduction nor internal fixation was applied to the case presented in our study. No case of osteoid osteoma was encountered in the literature, developing after conservative treatment of a distal end fracture of the radius. The radiological view of the fracture fragment formed in the epiphysis after trauma was suspected to have been formed by a mechanism similar to osteochondritis dissecans separate from the epiphysis. However, upon pathological evaluation, the lesion was determined to be a typical osteoid osteoma as no epiphyseal or cartilage-like tissue was found. Diseases such as De Quervain's tenosynovitis and osteomyelitis should be considered in the differential diagnosis of lesions in this area.^[11-15] Differentiation can be made by evaluating clinical, laboratory and radiological data together.

In conclusion, osteoid osteoma may also develop after trauma but in an atypical manner and location, as presented in our study. Osteoid osteoma should be kept in mind in the differential diagnosis in cases of persistent pain following treatment in an extremity that had suffered trauma.

Conflicts of Interest: No conflicts declared.

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