An osteoid osteoma is the third most common benign bone tumor and represents approximately 14% of all bone tumors. It rarely presents in hand or carpal bones. Of the carpal bones, the scaphoid is most commonly affected, followed by the capitate, and very rarely the lunate bone. They have a well vascularized center called “nidus” with a surrounding zone of thickened cortex and reactive bone sclerosis. Its most common location is in thighs and calves. It is most commonly found in males between the ages of 10–20 years and rarely found after the age of 30 years. The main clinical symptom is unremitting local pains, especially at night times, which are relieved by salicylates. The mainstay of imaging including plain radiographs, computed tomography, magnetic resonance imaging, and bone scintigraphy led to the clinical diagnosis of a lunatomalacia. The tumor was removed by coincidence during removal of the diseased lunate bone. Postoperatively, the patient was immediately free of pain and remained free at his 3 months postoperative follow-up.

**OUR CASE**

A 61-year-old man presented with a 2½-year history of persistent severe pain in his left wrist, progressive wrist swelling, and reduction of wrist function and power. Pains were particularly severe at night times and were relieved by Arcoxia. Other nonsteroidal anti-rheumatic drugs were not tolerated by the patient, who suffered from ulcerative colitis.

Preceding the start of pains had been a hyperextension trauma to the wrist after which initial radiographic imaging had revealed an oedema of the lunate bone with a surrounding area of inflammation. When the pain had continued for many months, further imaging had been conducted including plain radiographs, CT, and MRI scans as well as bone scintigraphy (Fig. 1A,B).

In a multidisciplinary team meeting with our radiologists, the old MRI scans were compared with the new scans. The multidisciplinary team eventually excluded the diagnosis of lunatomalacia and concluded an oedematous reaction around the lunate bone with some bone degeneration. Therefore, a conservative treatment was chosen. However, despite all conservative measures including wrist immobilization in a cast, physiotherapy, work therapy, and intensified pain therapy including the use of opioids, symptoms did not improve. A repeated CT taken 8 months later revealed no signs of inflammation, but an MRI showed synovitis of the radiocarpal ligaments as well as signs of rheumatoid arthritis.

The patient was referred to a rheumatologist who excluded a rheumatic cause, and nerve studies excluded a nerve compression syndrome. No typical signs for a complex regional pain syndrome were found. A repeated MRI 1 year later reported an osteomalacia of the lunate bone (Kienbock’s disease), as well as triquetromalacia and an old lunate fracture with a bone

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sequester in addition to early signs of posttraumatic bone necrosis (Fig. 1 C, D). Following this, a diagnostic arthroscopy was performed, which found both the scapholunate ligament and the fossa lunata intact but a grade 3 lunatomalacia with damage to the cartilage. The patient was advised to have a partial wrist fusion with Wilhelm denervation. The patient, however, asked for a complete wrist fusion. This was performed by complete lunate bone excision, plate insertion, and a spongiosaplasty from the iliac crest.

Postoperatively, the patient was completely pain free and remained free of pain during the entire follow-up over the next 3 months. The histopathology showed an osteoid osteoma of the excised lunate bone of the left carpus with no sign of malignancy.

**DISCUSSION**

The osteoid osteoma was first established as a clinical entity in 1935. It is a benign bone tumor that usually presents in the first 2 decades of life with characteristic pain and radiographic appearance and is rare after the third decade of life. It often presents in the leg bones but is rare in the hand. Its most common location is within the cortex of the bone. The typical presentation is intense night-time pains, which are relieved by salicylates or non-steroidal anti-inflammatory drugs. In our case, the patient was 61 years old and therefore not within the typical age of presentation of this bone tumor, and the location of the wrist an unusual presentation site. In addition, salicylates and most non-steroidal anti-inflammatory drugs were not tolerated by the patient, who suffered from ulcerative colitis; hence, the typical pain relief under
these drugs was not elicited. Further, the tumor in this case did not present with the typical radiographic appearance of an osteoid osteoma with a nidus and a surrounding zone of thickened cortex and reactive bone sclerosis, neither on plain radiographs, CT, and MRI scans nor on bone scintigraphy. It was atypically located in the center of the lunate bone and not its cortex. In the literature, the appearance of an intramedullary osteoid osteoma has been described as an opaque or a radiolucent zone without perifocal sclerosis. Identification of an intramedullary nidus on plain radiography is more difficult because reactive sclerosis is not always present.

In our case, the history of previous trauma, the MRI that confirmed a lunatomalacia as well as the atypical age, location, and radiographic appearance for an osteoid osteoma led in all respects to an unexpected diagnosis.

In the literature, there is a general agreement that complete excision is the treatment of choice and that removal of the nidus leads to immediate pain relief. In our case, it was not possible to elicit whether the patient’s pain was solely caused by the osteoid osteoma or by the progressive destruction of the carpal bones or both. However, as the bone consisting the tumor was excised completely, any pain that was caused by this tumor is not expected to return. So far, at the 3 months postoperative follow-up, the patient remains pain free.

CONCLUSIONS

We presented an extremely rare case of an osteoid osteoma within the lunate bone with an atypical history, location, and radiographic presentation. Accurate evaluation of the history and radiographic findings is very important. However, comorbidities such as inflammatory bowel diseases and degenerative carpal bone diseases may mask exact clinical diagnosis.