

# OSTEOID OSTEOMA OF THE PATELLA PRESENTING AS CHRONIC ANTERIOR KNEE PAIN

## Case report and review of the literature

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### ABSTRACT

Osteoid osteoma is a benign bone forming tumor with a characteristic radiographic appearance. Femur and tibia is the frequent site of involvement. Osteoid osteoma in the patella is a rare condition of which only a few cases have been reported in the literature. Non-specific knee pain, difficulty to distinguish nidus, and lack of typical sclerotic bone formation in plain radiographs cause a delay in diagnosis. We report a 15 years old girl with anterior left knee pain since 1.5 year. Imaging findings and biopsy of the lesion confirmed osteoid osteoma. The pain was relived after surgical resection of the tumor and patient was symptom free with no evidence of recurrence at 12 months after surgery.

**KEY WORDS:** Osteoid osteoma, Patella, Tumor resection, Knee pain.

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### INTRODUCTION

Osteoid osteoma is a benign osteoblastic lesion. It was first described by Jaffe in 1935.<sup>1</sup> Although any bone can be affected, but femur and tibia are the most frequent site of involvement and at least 50% of all cases reported in these two

long bones. The location of osteoid osteoma may be intracortical, subperiosteal, endosteal, or medullary. This tumor is usually found in the patients between the ages of 10 and 30 with a male to female ratio of approximately 3:1.

This tumor accounts for 10-20% of benign skeletal neoplasms and is most commonly located in the cortex of long bones where it is associated with bone sclerosis.<sup>1-3</sup> Less often, it may be cancellous, where reactive osteosclerosis is usually less intense and may be distant from the lesion. Cancellous lesions are frequently intraarticular and may be associated with synovitis, joint swelling, and late diagnosis.<sup>4</sup>

In a typical patient pain is the usual presenting symptom and is often severe, worse at night, and classically relieved by non-steroidal anti-inflammatory drugs. Symptoms of osteoid osteoma in particular when it is located intra articular, can last from months to years before definite diagnosis and eventual surgery. The

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tumor consists of a central nidus less than 1.5 cm in diameter composed of a highly vascularized stroma, atypical woven bone, peripheral nerve fibers and surrounded by a peripheral zone of bony sclerosis.<sup>2</sup> Diagnosis of osteoid osteoma can be difficult when it is located in small bones of the foot, hand, vertebrae or in the case of intra articular involvement. Patella is a very rare location for this tumor and diagnosis is made late because of atypical clinical and radiographic findings.<sup>5</sup> We describe a patient with osteoid osteoma of the patella and results of surgical resection of the lesion at 12 months follow-up.

### CASE REPORT

A 15-year-old girl was referred to our hospital on March 2008 with a one and half year history of left knee pain. Pain was present day and night, well localized at the patella and relieved by analgesic drugs.

The initial radiography of the knee has been unremarkable so she was treated by her family physician as a case of chondromalacia patella for about 6 months. In a few later months, pain increased at night and after activity, and only temporary reduced by nonsteroidal anti-inflammatory administration. There was no history of previous trauma. Physical examination revealed mild effusion and a tender point at the distal

third of patella, no redness and no local rise of temperature.

Range of motion was slightly limited due to pain. Laboratory studies including CBC, ESR, CRP, CA, P, and basic biochemical control were unremarkable. The initial radiography of the knee was unavailable. We suspected clinically the probable diagnosis of osteoid osteoma because of her constant pain which had recently increased at night had a good response with oral analgesic drugs. After taking X-Ray of the knee joint, osteochondritis of patella was considered in differential diagnosis. Bone scan by TC-99m revealed a small area with increased perfusion and intense uptake at medial aspect of left patella (Fig-1 and 2).

Plain radiography and Computed tomography (CT) scan of the patella clearly showed classic lesion of osteoid osteoma with bull's-eye surrounding reactive bone in medial of the patella (Fig-3). The history, clinical and radiographic findings pointed to the diagnosis of an osteoid osteoma of left patella.

The patient was operated one month later using an anteromedial approach under general anesthesia. An En bloc excision of the nidus was performed using a small curette also the rim of sclerotic bone inside the lesion was removed. The knee was immobilized postoperatively with a splint for two weeks, and then physiotherapy

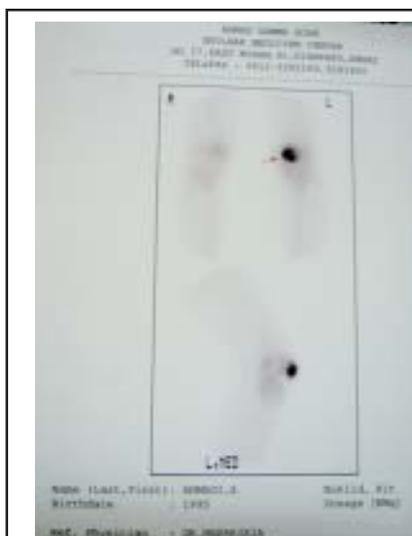


Fig-1

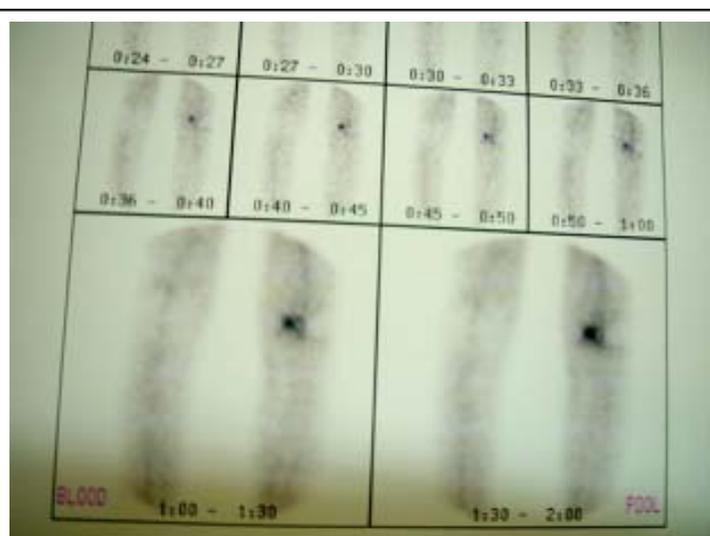


Fig-2

Fig-1 & 2: Three phase Bone Scan reveals increased and intense uptake at medial aspect of the left patella.

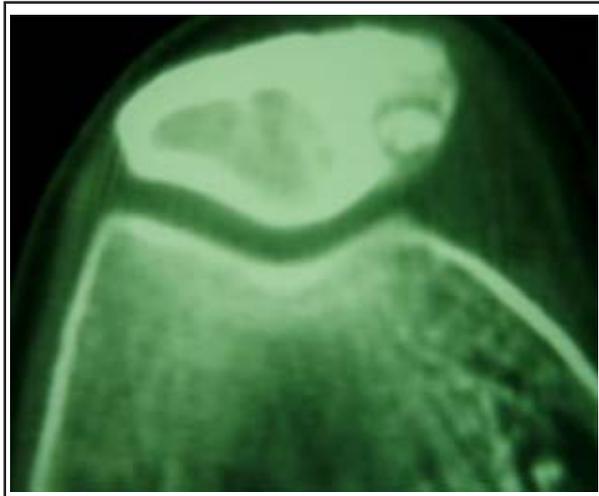


Fig 3: It shows classic lesion of osteoid osteoma with bull's-eye surrounding reactive bone in medial aspect of the patella.

was initiated for twenty sessions. The symptom of pain disappeared completely within the few days following surgery.

Histological examination confirmed the diagnosis of osteoid osteoma. On last follow-up examination 12 months later, there was no evidence of effusion, redness or local rise of temperature. She was completely free of pain with full daily activities, whereas the range of motion of knee was normal, with no evidence of recurrence.

## DISCUSSION

Although the clinical and imaging findings of osteoid osteoma in a typical patient is usually diagnostic, it may not be so where the lesion is in rare locations. In these events the diagnosis of osteoid osteoma can be difficult and may be misdiagnosed with lesions such as osteochondritis, meniscus injury, and subacute osteomyelitis of Garre, eosinophilic granuloma, painful scoliosis, nonspecific synovitis or juvenile rheumatoid arthritis. Intra articular lesions may also present with joint effusion, soft tissue swelling, and contracture. In these patients the diagnosis of osteoid osteoma is made only after biopsy and histopathologic examination of the nidus. Five to 12 percent of osteoid osteomas are intraarticular and most of them have reported in the hip, so these patients present with chronic

arthralgia, arthritis and limping.<sup>6</sup> The radiological characteristics of intra-articular osteoid osteoma including nidus and osteosclerosis are usually absent in 50% to 70% of the cases, and plain radiological image may be normal or shows local periarticular osteopenia.<sup>7</sup> Szendroi et al. reported that the average times to diagnosis for intra-articular osteoid osteoma was 26.6 months compared to 8.5 months for other locations.<sup>8</sup> In the literature, times to diagnosis of intraarticular osteoid osteoma range from four months to five years.<sup>7-9</sup> In this case report the time to diagnosis was 18 months.

In the radiography of classic osteoid osteoma the cortical lesions may appear with sclerosis that may obscure the lucent nidus, whilst subperiosteal epiphyseal and metaphyseal lesions may show only minimal sclerotic changes around the nidus. This finding is usually absent when the tumor is intra articular or in positions such as in the patient that we have described here. In our patient osteochondritis of the patella was suspected first in differential diagnosis. Biopsy of the lesion recognized osteoid osteoma along with rapid relief of the knee pain.<sup>10-12</sup>

Although this tumor may regress spontaneously after a long time, but surgery is usually indicated in symptomatic patients not responding to medical treatment. Surgical option includes wide excision of the nidus and curettage of the lesion.<sup>13-15</sup> A variety of less invasive techniques such as CT-guided core drill excision, radionuclide – guided excision, percutaneous radiofrequency ablation, injection of ethanol, or interstitial laser photocoagulation (ILP) have been used.<sup>16-20</sup> Both wide excision and deroofing with curettage of the nidus have reported cure rates of 75-100%.<sup>21-23</sup>

In Review of the English literature we found only seven previously reported cases of osteoid osteoma of the patella.<sup>24-28</sup> All of those were diagnosed late and in one case the tumor was diagnosed only after total patellectomy. Proper diagnosis of these rare cases that mimic much more common causes of patello-femoral, or anterior knee pain demands a high index of suspicion.<sup>22</sup>

We recommend the use of radioisotope bone scan and CT scan for patients with a history of chronic arthritis and knee pain in whom the clinical and radiological findings are obscure and a definite diagnosis of a known disease is not made. Diagnosis of these rare cases that mimic much more common causes of patello-femoral pain demands a high index of suspicion.

### CONCLUSION

In differential diagnosis of patients with chronic anterior knee pain and unexplained patello femoral disorders, osteoid osteoma of the patella can be considered. Radiographic appearance of sclerosis is usually absent in this intraarticular lesions so, isotope bone scan, CT scan and biopsy of the lesion is necessary for diagnosis. Wide resection achieved relief of pain at 12 months after surgery.

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