



Extracranial location of the osteoma: Patella, case report and literature review

Ekstrakraniyal yerleşimli osteoma:
Patella, olgu sunumu ve literatürün gözden geçirilmesi

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ABSTRACT

Osteoma is a benign tumor. Extracranial cases are very rare. Twelve cases have been reported by 10 different authors in the literature. To our knowledge, osteoma was never reported in the patella. In this article, we report a 61-year-old male patient who presented with a painless mass in the patella of his right knee, which appeared almost four years before and showed a progressive enlargement in the past six months. Range of motion (ROM) of the joint was limited. Marginal excision was performed under regional anesthesia and the histopathological evaluation of the lesion confirmed the diagnosis of osteoma. There were no postoperative complications and the ROM of the joint returned to normal. Patient was followed-up for 24 months without any recurrence. This case of peripheral osteoma identified in the patella is an example of an atypical presentation. Patella tumors may affect the extensor mechanism. Therefore, detailed examination should be performed and differential diagnosis should be established carefully.

Keywords: Extensor mechanism; extracranial; osteoma; patella; peripheral.

ÖZ

Osteoma iyi huylu bir tümördür. Ekstrakraniyal olgular çok nadirdir. Literatürde 10 farklı yazar tarafından 12 olgu bildirilmiştir. Bildiğimiz kadarıyla, osteoma daha önce hiç patellada bildirilmemiştir. Bu yazıda, yaklaşık dört yıl önce ortaya çıkan ve son altı ay içinde ilerleyici bir genişleme gösteren sağ dizindeki patellada ağrısız bir kitle ile başvuran 61 yaşında bir erkek hasta sunuldu. Eklem hareket açıklığı (EHA) kısıtlı idi. Bölgesel anestezi altında marjinal eksizeyon yapıldı ve lezyonun histopatolojik değerlendirmesi osteoma tanısını doğruladı. Ameliyat sonrası komplikasyon yoktu ve EHA normale döndü. Hasta 24 ay boyunca nüks olmaksızın takip edildi. Patellada tanımlanan bu periferik osteoma olgusu atipik bir sunum örneğidir. Patella tümörleri ekstansör mekanizmayı etkileyebilir. Bu nedenle, ayrıntılı inceleme yapılmalı ve ayırıcı tanı dikkatle konulmalıdır.

Anahtar sözcükler: Ekstansör mekanizma; ekstrakraniyal; osteoma; patella, periferik.

Osteoma is a benign tumor of slowly growing membranous bones. Histologically, an osteoma is composed of both woven and dense bone and then arises strictly from the cortex of the bone.^[1] Osteoma is most commonly seen in paranasal sinuses, skulls, and long bones. At times, it becomes symptomatic because of its location. Differential diagnosis

should be established with similar conditions including osteosarcoma, osteochondroma, synovial osteochondromatosis, ossifying lipoma and myositis ossificans.^[2]

Patellar tumors have a low incidence and most are giant cell tumors or chondroblastomas.^[3] The lesions on the patella may affect the range of motion (ROM)

Received: June 25, 2018 Accepted: July 24, 2018

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Citation:

Ayas MS, Gül O, Dada ME. Extracranial location of the osteoma: Patella, case report and literature review. Eklem Hastalık Cerrahisi 2018;29(3):189-192.



Figure 1. Radiography shows lesion with similar densities of cortex on anterior of patella.

of the joint by affecting the extensor mechanism. In this article, we present a peripheral osteoma of the patella which, to our knowledge, is a localization not previously reported.

CASE REPORT

A 61-year-old male patient presented to our clinic with pain, swelling and limitation of movement in

the knee. The patient complained about progressive right knee pain and increased swelling for the past six months. Patient had complaints for four years. He was a construction worker and frequently worked with the support of the knee. He had no gastrointestinal complaints. A written informed consent was obtained from the patient.

No skin lesions were found in the general body examination. There was marked swelling of the right knee. The mass had no tenderness and was fixed. Range of motion was 0-110°. There was a loss of 30° flexion of the knee joint. Radiography showed lesion with similar densities to benign cortex on the anterior of patella (Figure 1). In the magnetic resonance (MR) review, T₁ and T₂ sequences showed low-signal intensity in the cortex (Figure 2a, b). An excisional biopsy was planned since the history of the patient suggested benign pathology. Under spinal anesthesia, midpatellar approach was used without utilizing a tourniquet. The mass was under the prepatellar bursa and was associated with the patella. It was excised marginally by preserving the extensor mechanism.

Histological examination revealed that the excised mass was a bone osteoma (Figures 3, 4). Following surgery, the symptoms were eradicated. The patient was followed-up for 24 months without any recurrence.

DISCUSSION

Osteoma is a benign tumor of slowly growing membranous bones, usually originating from the subperiosteal or endosteal surfaces of the bone cortex. Osteomas are most commonly seen in paranasal

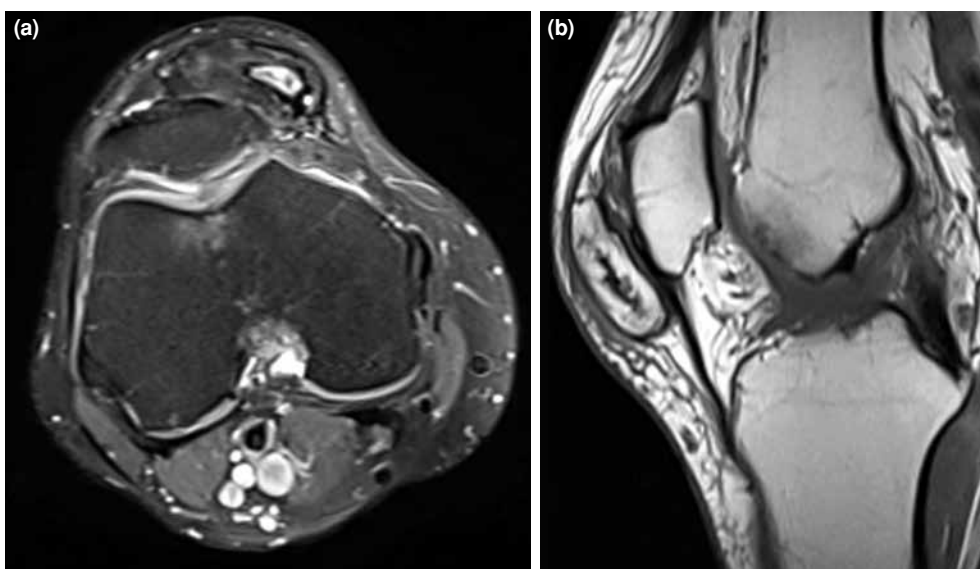


Figure 2. Magnetic resonance imaging shows (a) T₂ axial section and (b) T₁ sagittal section of cortex on anterior of patella.

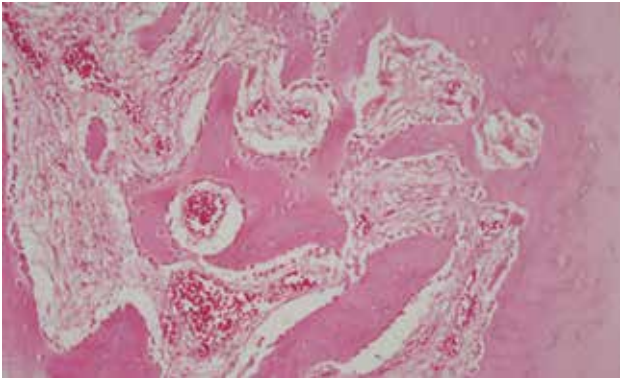


Figure 3. Excised mass shows a disordered trabeculae structure and osteoblastic activity of mature bone (H-E×100).

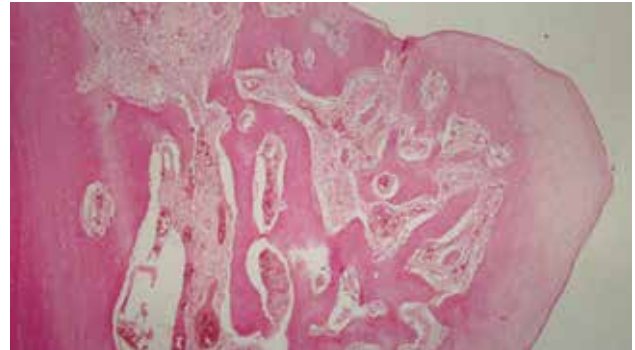


Figure 4. Excised mass shows a disordered trabeculae structure composed of mature bone. Osteoblastic rim and cortical bone tissue (H-E×40).

sinuses, skulls and long bones.^[4,5] The literature reports extracranial osteomas to be localized in soft tissues and bones. Localizations of the cases in extracranial bones include the tibia, femur, acetabulum, pubis, ilium, metacarpa, ulna, humerus, clavicle, and costa.^[6-16] In this article, we presented a peripheral osteoma of the patella, which is, to our knowledge, a localization not previously reported.

Some theories have been proposed to explain the pathological mechanism of osteomas. These lesions were associated with abnormal enlargement of fetal periosteum or residual cartilage, reactive lesions developing after trauma, muscle trauma and infection, inflammatory and endocrine causes as well as true neoplasms. However, it is challenging to establish the relationship for a specific reason.^[9,17,18] One hereditary disorder, the Gardner's syndrome, is characterized by intestinal polyps, epidermoid cysts, dermoid tumors and multiple osteomas.^[19] Bone tumors may precede the appearance of intestinal polyps, which have marked propensity to carcinomatous change.^[2] Therefore, although solitary osteoma is usually harmless, there is a risk that the case may have other underlying conditions such as Gardner's syndrome.^[4] The etiology in our patient revealed recurrent microtrauma. The case in this article was slowly growing. Also, there was no pathology associated with Gardner's syndrome.

Conventional radiography is the basis for the diagnosis of osteoma. Radiographs typically show a dense, ivory-like sclerotic mass attached to the bone, with sharply demarcated borders.^[2] Radiography and computed tomography (CT) shows a similar intensity to the cortex. In all MR imaging sequences, it shows low-signal intensity characteristics of the cortex.^[1] We used conventional radiography and MR imaging in our case. We preferred MR imaging because it shows invasion in malignant pathologies and gives

more information about the anatomy of the extensor mechanism.

Parosteal osteosarcoma, osteochondroma, periosteal osteoblastoma, ossifying periosteal lipoma, osteoid osteoma, fibro-osseous lesion, cementoblastoma, exostosis, complex odontoma, end stage osteomyelitis and myositis ossificans should be included in the differential diagnosis of solitary osteoma.^[2,9,20] Among these, parosteal osteosarcoma is the most important condition to be excluded. Radiographically, it may be difficult to separate them because both lesions appear as ivory-like masses on the bone surface. However, osteoma in conventional radiography is usually smooth-edged and well-defined, with dense homogeneous sclerotic appearance. On the contrary, parosteal osteosarcoma may show a decreased density region in the periphery and appear less dense and homogeneous than osteoma in general.^[2]

Patellar tumors have a low incidence and most are giant cell tumors and chondroblastomas.^[3] Other benign tumors reported in patella include chondromas, aneurysmal bone cysts,^[21] osteoid osteomas, osteoblastomas, osseous hemangiomas, simple bone cysts, and osteochondromas. Also, malignant tumors were reported in patella such as osteosarcomas, chondrosarcomas, primary osseous lymphomas, malignant fibrous histiocytomas and metastases.^[22] To our knowledge, osteomas have never been reported in patella.

Signs and symptoms associated with osteoma vary according to the size and location of the lesion. Small lesions are usually asymptomatic and incidentally recognized. The majority of patients applying to orthopedic clinics complain of unilateral anterior knee pain. This pain is similar to degenerative osteoarthritis or pain caused by patellar

chondromalacia and is often caused by delayed onset. The average time between the onset of symptoms and the introduction of the primary diagnosis is 17 months (range, 4 to 36 months).^[23] During the initial evaluation, some minor radiological changes may not be considered and this may postpone the diagnosis. Therefore, patients with anterior knee pain should be suspected of having a patellar tumor and assessed radiologically.

Surgery is the most effective treatment for the symptomatic patients who have a patellar tumor. Successful diagnosis and differential diagnosis may be obtained through clinical appearance, plain radiography, CT scan, emission CT and histopathological examination. Moreover, according to different characterization of patients, suitable surgical options may range from simple curettage with bone grafting, excision, patellectomy with extensor mechanism reconstruction, and knee resection to above knee amputation.^[4,22,24] Histologically, an osteoma is composed of both woven and dense bone, and it arises from the cortex of the bone. Therefore, it is treated with marginal excision.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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