

# Intraosseous Synovial Cyst In The Olecranon Secondary To Rheumatoid Arthritis

R Okten, H Ulubay, F Kucukay, K Arda

## Citation

R Okten, H Ulubay, F Kucukay, K Arda. *Intraosseous Synovial Cyst In The Olecranon Secondary To Rheumatoid Arthritis*. The Internet Journal of Radiology. 2004 Volume 4 Number 1.

## Abstract

Intraosseous synovial cyst which develops secondary to rheumatoid arthritis (RA) is a rare condition. We report the case of a patient with RA in whom a synovial cyst was localized in the olecranon. A 72-year-old male patient who has been diagnosed of RA was admitted with the complaint of pain and swelling on his left elbow and an insensibility in the left hand. Posteroanterior and lateral radiographs and magnetic resonance imaging were used for the definition of the pathology. When we evaluated the radiological findings we concluded of intraosseous synovial cyst. " Intraosseous synovial cyst " should be considered in differential diagnosis of an epiphyseal well-marginated lucent bone lesions.

## INTRODUCTION

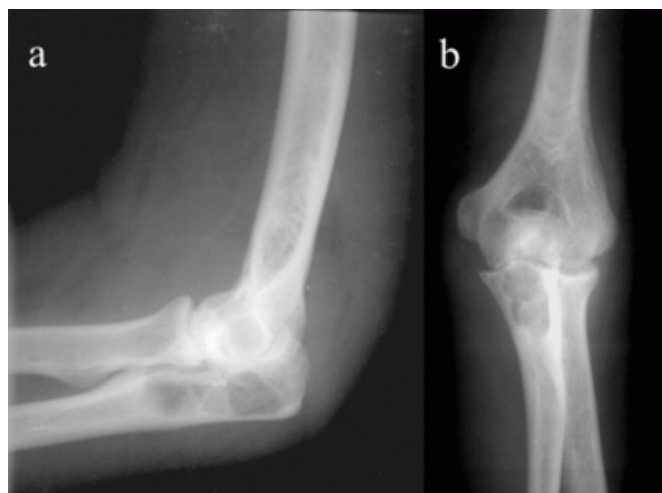
An intraosseous synovial cyst is relatively uncommon. Benign cyst like lesions that occur in young and middle aged adults, usually located in the end of long bones. Cyst formation is frequently encountered in osteoarthritic joints. Intraosseous synovial cyst which develops secondary to rheumatoid arthritis (RA) is a rare condition. This term is used to designate both mucoid and epiphyseal cyst like lesion in RA patient. Synovial cyst arise in close proximity to joint capsules and tendon sheaths. It must be often found in the long bones' epiphysis such as hip, ankle, knee and elbow. Intraosseous synovial cyst is quite seldomly situated in the olecranon. We aimed to present the radiological findings of a synovial cyst due to RA that was set in the olecranon.

## CASE REPORT

A 56 year old male patient who has been diagnosed as RA, was admitted with the complaint of pain and swelling on his left elbow and an insensibility in the left hand. Posteroanterior and lateral radiographs showed a smoothly marginated radiolucent lesion in the olecranon which eroded the boney cortex (Figure 1a-b).

## Figure 1

Figure 1a-b: Lateral (a) and posteroanterior (b) radiograph shows a lobulated, lytic lesion in the olecranon. There are minimal sclerotic changes around the lytic lesion.

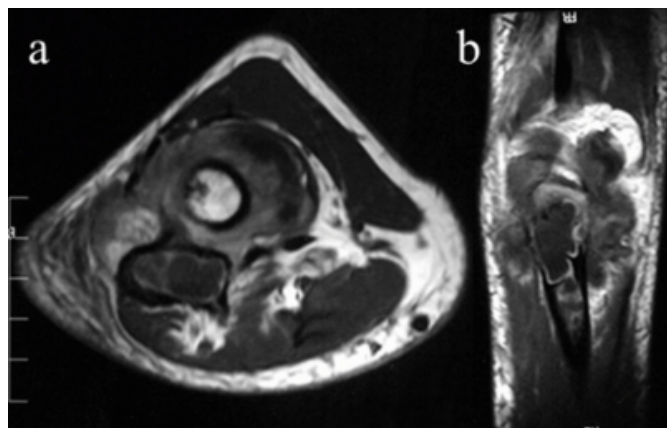


The lobulated lesion was containing septations. Magnetic resonance imaging (MRI) demonstrated a view similar to a large intraosseous synovial cyst. Extending to the proximal diaphysis in the olecranon, showing lobular septations in T2W axial images, having peripheral enhancement after administration of contrast medium. In addition, there were some changes in the joint space these are; capsule distending, cartilages erosion over the articular faces, herniation to the periarticular soft tissue, stretching of the tendineous formations, ulnar nerve compression, reactional inflammatory enhancing in flexor carpi ulnaris, anconeus

and supinator muscles of similar to the changes seen in rheumatoid synovitis (Figure 2a-b), (Figure 3a-b).

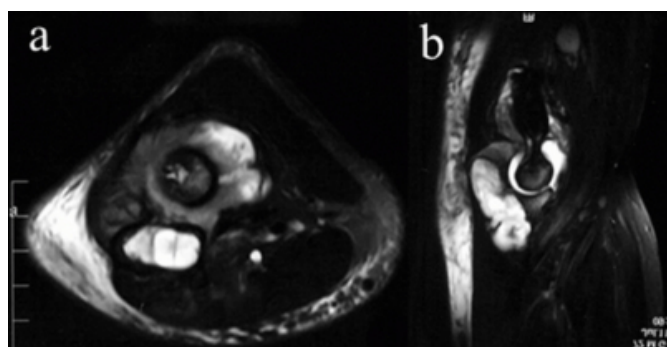
### Figure 2

Figure 2a-b: Postcontrast T1 weighted axial (a) and coronal images (b) demonstrate the lobulated cystic lesion in the olecranon. This lesion contains septations and after contrast medium administration there is enhancement around the soft tissue.



### Figure 3

Figure 3a-b: T2 weighted axial (a) and sagittal images (b) demonstrate the same lesion.



## DISCUSSION AND CONCLUSION

Synovial cysts occur secondary to the trauma, degeneration and inflammation (1). It is most often found in the popliteal region (2). Intraosseous synovial cyst and the cysts seen in the soft tissue are histologically similar. Intraosseous synovial cyst can be called as subchondral bone cyst, intraosseous ganglion, the ganglion cyst of the bone, the ganglionic cystic defect of bone, besides the subchondral pseudocyst in the injured articulation and the lesions like giant cysts. Intraosseous synovial cyst is used to describe both the mucoid cysts and the lesions like epiphyseal cysts in the RA. But the definition of intraosseous synovial cyst must be used for geods whose wall was formed by the synovial tissue at the adjacent to the injured articulation (3).

They are must often found in the long bones' epiphysis such as hip, ankle, knee and elbow (4). Intraosseous synovial cyst in the ulna is a very rare condition. This can be associated with RA or occur spontaneously. The lesions like subchondral cysts are pathologically formed with lax fibrose and connective tissue which are not surrounded by the epithel or synovium. They connect with the articular space through the erosions of the subchondral bone or articular cartilage (3). Intraosseous synovial cyst or geod seen in RA is formed by the spread of articular fluid from the fragile cartilage to the fragile bone because of the increased pressure in the injured articulation, effusion, synovial hypertrophy in addition to the loss of capsular and pericapsular elasticity (3). Histologically the osseous synovial cysts show multiloculation like soft tissue's cysts and are constituted by dense mucoid changes and fibrose tissue. Conventional radiographs demonstrate typically epiphyseal, well-marginated, lytic or lucent lesions with sclerotic rim (3,4,5). Lesion may cause pathologic fracture and calcification in the lesion is uncommon (6). On T1 weighted images, they show izointermediate signal intensity however on T2 weighted images they show high signal intensity. There are contradictory opinions about demonstration of the relation between lesion and articular space by the radiographic methods (3,4,5). This situation arise from two different hypothesis for pathogenesis of the disease. According to the theory of the articular fluid pass; the articular connection, the fragments of articular cartilage in the cyst can be shown and the lesion's fluid is similar to the synovial fluid. The other theory is based on contusion of the bone; the damaged cartilage can not protect the bone and it cause focal necrosis. In this theory, there is not a direct connection between the lesion and joint. However, during the healing stage ther is a secondary articular fluid pass which is not caused by increased pressure in the articular space (5,6,7,8). In our case, typical conventional radiographs and MRI findings are seen but there is not connection between the lesion and the joint. Cystic bone lesions and the intraosseous synovial cyst is rarely reported in the olecranon (10,11,12,13). They cause spontaneeon fracture and vacuum phenomenon (11,12,13,14). For this reason when the articular pain increases in a patient with RA, radiographic evaluation must be done for other probable complications thinking before exacerbation of inflammation. In our case, the radiological imaging for the investigation of articular pain revealed the intraosseous synovial cyst. The cyst caused by osteoartrit, posttravmatic cysts, simple bone cysts, epidermoid cysts, chondroblastoma, osteoblastoma,

enchondroma and bone abcess should be considered in differential diagnosis. As a result, if an underlying cause is present, intraosseous synovial cyst should be considered in differential diagnosis of an epiphyseal, well- margined, lucent bone lesions showed by direct radiography and MRI imaging is useful for the clarification.

## **CORRESPONDENCE TO**

Fahrettin KUCUKAY, MD Türkiye Yüksek İhtisas Hospital,  
Department of Radiology, Sıhhiye 06100, Ankara /  
TURKEY Telephone number: + 90-312-3103080/1652 Fax:  
+90-312-312-4122 E-mail: fkucukay@hotmail.com

## **References**

1. Perri JA, Rodnan GP, Mankin HJ. Giant synovial cysts of the calf in patients with rheumatoid arthritis. *J Bone Joint surg* 1968; 50: 709-719.
2. Pastershank SP, Mitchell DM. Knee joint bursal abnormalities in rheumatic arthritis. *J Can Assoc Radiol* 1977; 28: 199-203.
3. Lohse A, Carbillet JP, Onimus M, Stevenel F, Toussiot E, Wendling D. Giant intaosseous cyst-like lesions in rheumatoid arthritis report of a case. *Joint Bone Spine*. 2003; 70(1): 67-70.
4. Klingman M, Roffman M. Intraosseous ganglia of glenoid. *J South Orthop Assoc*. 2000; 9(3): 216-8.
5. Pablos JM, Valdes JC, Gavilan F. Bilateral lunate intraosseous ganglia. *Skeletal Radiol*. 1998; 27(12): 708-10.
6. Cohen AP; McWilliams TG. Giant geode (pseudocyst) formation of the femoral neck in a case of osteoarthritis. *Rheumatology*. 2000; 39(4): 443-4.
7. Hunder GG, Ward LE, Ivins JC. Rheumatoid granulomatous lesion simulating malignancy in the head and neck of the femur. *Mayo Clin Proc* 1965; 40: 766-70.
8. Lloyd KN, Agarwal A, Rees D. Penetrating subarticular erosions in the elbow in rheumatoid arthritis. *Rheumatol Phys Med* 1971; 11:1805.
9. Donald Resnik, Gen Niwayama. Diagnosis of bone and joint disorders. 1988; 2: 1379-80.
10. Pollono F, Cavalli F. On a case of solitary osseous cyst of the olecranon *Minerva Ortop*. 1967 Oct 18(10): 680-2.
11. Ehara S, Kattapuram SV, Khurana JS, Rosenberg AE. Case report 551: Intraosseous ganglion of olecranon with vacuum phenomenon. *Skeletal Radiol*. 1989. 18(4): 329-30.
12. Petrie JP, Wigley RD. Proximal dissection of the olecranon bursa in rheumatoid arthritis. *Rheumatol Int*. 1984; 4(3): 593-5.
13. Wilson JT, Sokoloff L. Epidermoid cysts simulating rheumatoid nodules in the olecranon region. *JAMA*. 1970 Oct 19; 214(3): 593-5.
14. Rappoport AS, Sosman JL, Weissman BN. Spontaneous fractures of the olecranon process in rheumatoid arthritis. *Radiology*. 1976; 119(1): 83-4.

**Author Information**

**R. Sarper Okten, M.D.**

Department Of Radiology, Türkiye Yüksek İhtisas Hospital

**Hakan Ulubay, M.D.**

Visart Mr Imaging Center

**Fahrettin Kucukay, M.D.**

Department Of Radiology, Türkiye Yüksek İhtisas Hospital

**Kemal Arda, M.D.**

Department Of Radiology, Türkiye Yüksek İhtisas Hospital