Hand & Microsurgery

Case Report
Hand Microsurg 2018;7:109-111
doi:10.5455/handmicrosurg.269392

Synovial chondromatosis of the wrist

Murat Kayalar[1], Abuzer Uludag[2], Basak Doganavsargil Yakut[3], Ahmet Savran[4]

ABSTRACT

Synovial chondromatosis is the process of progressive metaplasia associated with formation of cartilage in synovial membranes of joints, tendon sheaths or bursae. It is a rare, chronic, benign disease with unknown etiology which involves single joint. It is generally seen in large joints like knee, hip and, ankle. Wrist involvement is very rare. More common diagnoses with calcified foci and effusion in a joint like rheumatoid arthritis, osteoarthritis, synovial osteochondromatosis, chondrocalcinosis, calcifications that occur after septic arthritis and synovial chondrosarcoma may interfere with this condition. And high recurrence rate makes the treatment challenging for orthopaedic surgeon. Treatment consists of surgically removing loose bodies and partial or total synovectomy. Here, we present a 31 years old male patient referred to our clinic with painfull recurrent wrist mass. And patient was reoperated for synovial chondromatosis of wrist 17 months after the first operation. We represented the preoperative findings and histopathologic confirmation of synovial chondromatosis. We didn't encounter any recurrence in the follow up period nearly 5 years after tumor removal and synovectomy. We will also discuss differential diagnosis and treatment according to updated literature.

Key words: *Chondromatosis, recurrent, synovial, wrist*

Introduction

Synovial chondromatosis is the process of progressive metaplasia, associated with formation of cartilage in synovial membranes of joints, tendon sheaths, or bursae. It is a rare, chronic, benign disease with unknown etiology, which involves a single joint. It is generally seen in large joints like knees, hips, and ankles. However, wrist joint involvement is very rare [1-3].

In this study, we present a 31 year old male patient, who was re-operated upon for synovial chondromatosis of wrist 17 months after the first operation and we will also discuss differential diagnosis and treatment according to the updated literature.

Case Report

A 29 year old male was operated on, at another hospital, due to swelling on the volar-radial side of his left wrist, despite the lack of a known traumatic incident. He has had magnetic resonance imaging (MRI) before operation. Histopathological evaluation of the excised parts resulted in a diagnosis of synovial chon-

Author affiliations : *Department of Orthopaedic Surgery [1]EMOT Hospital, Kahramanlar, Izmir, Turkey [2]Faculty of Medicine, Adiyaman University Medical Faculty, Adiyaman, Turkey [3]Department of Pathology, Faculty of Medicine, Ege University, Izmir, Turkey [4]Department of Hand Surgery, Katip Celebi University Ataturk Education and Research Hospital, Izmir, Turkey*
Correspondence : *Murat Kayalar, MD, Department of Orthopaedic Surgery, EMOT Hospital, Kahramanlar, Izmir, Turkey. e-mail: elmikro2003@yahoo.com*
Received / Accepted : *June 23, 2017 / September 10, 2017*

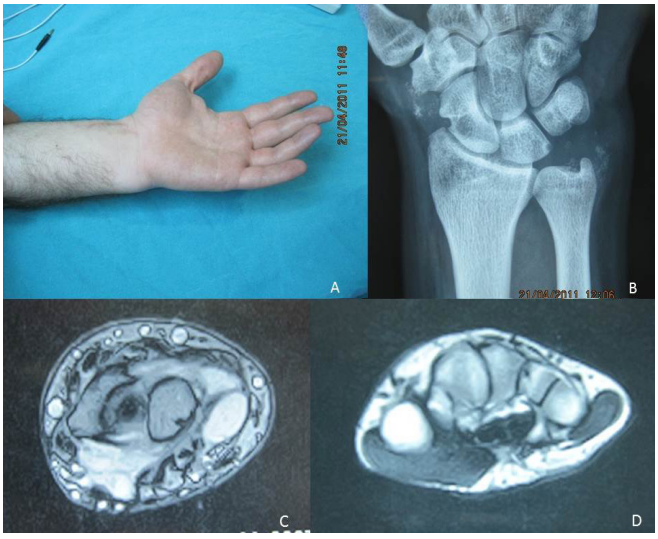

Figure 1. (A) Swelling at the ulnar side and surgical incision scar at the radial side due to first surgery. **(B)** Anteroposterior radiography. **(C)** Lesions with high signal intensity in T2 weighted images. **(D)** Lesions with low signal intensity in T1 weighted images.

dromatosis. After a painless period of 12 months, he referred to our clinic when the pain was restarted and swellings recurred at his wrist, probably due to residual tumor mass.

During his physical examination, there was a hard, 1.5x1.5cm mass in ulnar side of the wrist which was tender with palpation. Wrist flexion was 60 degrees, extension was 50 degrees and there was pain with ulnar deviation (Figure1A).

In the direct X-ray, there were multiple radiopaque soft tissue calcifications localized to ulnar styloid and radial styloid regions (Figure 1B).

MRI showed lesions which had low signal intensity in T1 weighted images and heterogeneous high signal intensity in T2 weighted lesions consistent with synovial chondromatosis (Figure 1C, D).

With these clinical and radiological findings, the patient was diagnosed with recurrent synovial chondromatosis was and he was operated upon. Radio-ulnar and radio-carpal joints of the wrist were reached by two separate incisions from volar and dorsal regions. Calcified masses were removed and partial synovectomy was performed. Volar radiocarpal ligament was repaired with an anchor.

In the histological evaluation of the curetted material, several chondroid nodules, some of which were lined by synovium or attached to synovia were identified. Cellularity was more prominent at the periphery of the nodules. Nuclear enlargening, rounding and scattered binucleated cells were noted however no hyperchromasia, mitosis or nuclear atypia were observed (Figure 2). Macroscopic appearance of excised lesion is identified with chondral and few calcificated material (Figure 3).

Discussion

Synovial chondromatosis is rarely seen in wrists. We performed a PubMed search and found 31 cases including ours. Male/female ratio was 1.3. Right/left hand ratio was also 1.3. The etiology is unknown. Trauma history is absent in most of the patients. It has a peak between 30-40 years of age [4].

Milgram described 3 phases of this disease. In phase 1, there is an active intra-synovial disease without loose bodies. In phase 2, there are loose bodies accompanying synovial proliferation. In phase 3, there are multiple loose bodies without intra-synovial disease [2].

Synovial chondromatosis at the wrist may be present clinically with localized pain, swelling, movement

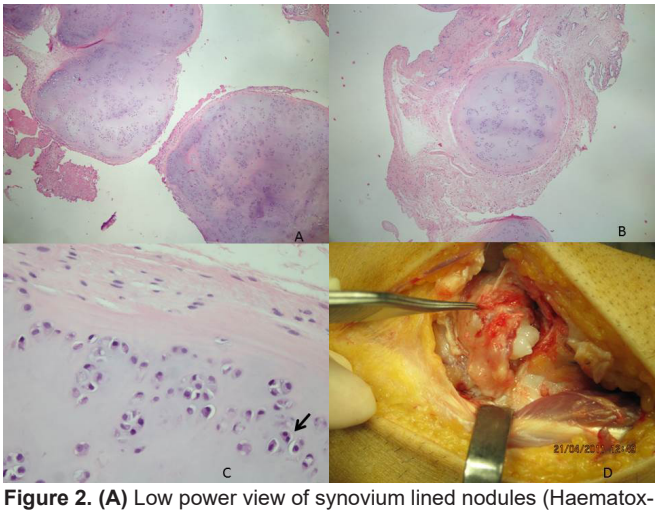

Figure 2. (A) Low power view of synovium lined nodules (Haematoxylen-eosin, x2) **(B)** A nodule located in the membrane. (Haematoxylen-eosin, x2) **(C)** Cellularity was more pronounced at the periphery of the nodules. Nuclear rounding and scattered binucleated cells were noted in chondrocytes (arrow). (Haematoxylen-eosin, x20) **(D)** Calcified deposits in an intraoperative photo.

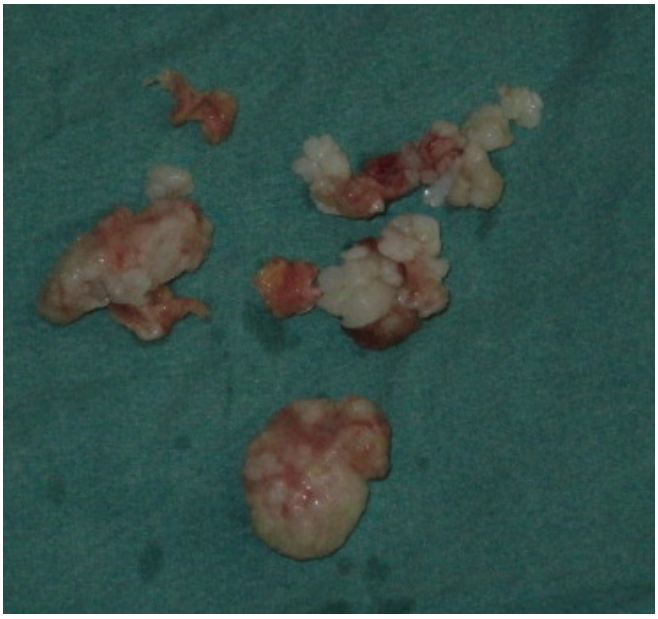

Figure 3. Macroscopic appearance of excised lesion.

limitation, immobility due to locking of the joints, and rarely, neurological findings due to the involvement of a nerve.

Differential diagnosis should include diseases that can cause calcified foci and effusion in a joint like rheumatoid arthritis, osteoarthritis, synovial osteochondromatosis, chondrocalcinosis, osteochondral fractures, advanced dejenerative joint disease, calcifications that occur after septic arthritis, tuberculosis, and synovial chondrosarcoma. Most other reasons are secondary to different conditions. And detailed anamnesis and examination helps differentiation.

Pigmented villonodular synovitis can be diagnosed with characteristic macroscopic appearance and low intensity on MRI. Another differential diagnosis is lipoma arborescens and can be easily recognized with fat signal on MRI. Synovial chondrosarcoma can be misdiagnosed with synovial chondromatosis. Synovial chondrosarcoma is more aggressive, can be extra-articular, metastatic and can demonstrate bone destruction. Chronic haemarthrosis, due to haemophilic arthropathy or synovial haemangioma, can cause diffuse proliferation of synovium and mimic synovial chondromatosis. Pathology specimens can be distinguished with lack of chondroid nodules of synovium.

Treatment consists of surgically removing loose bodies and partial or total synovectomy. In literature recurrences were seen between 6-108th months after surgery and recurrence rate is 19% (6/31) when our case is included. Inadequate surgical synovectomies performed during phase 1 and 2 of disease while synovial disease is still in progress is believed to be responsible from recurrence [4].

The most important problem is local recurrence which is seen at a high rate in synovial chondromatosis. Therefore careful follow up and informing patients about recurrence risk are warranted.

Conflict of interest statement

The authors have no conflicts of interest to declare.

References

1. Karlin CA, De Smet AA, Neff J, Lin F, Horton W, Wertzberger JJ. The variable manifestations of extraarticular synovial chondromatosis. Am J Roentgenol 1981;137:731-5.
2. Loonen MP, Schuurman AH. Recurrent synovial chondromatosis of the wrist: case report and literature review. Acta Orthop Belg 2005;71:230-5.
3. Milgram JW. Synovial osteochondromatosis: A histopathological study of thirty cases. J Bone Joint Surg Am 1977;59:792-801.
4. Reverte Vinaixa MM, Singh R, Monyart MJ, Llado GD, Dominguez MP, Feliu EC, et al. Wrist synovial chondromatosis: case report and literature review. J Hand Surg 2012;17:233-8.