A Case of Rheumatoid Arthritis Presenting as an Intra-articular Mass of the Wrist Joint in a Patient with Chronic Monoarthritis

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Rheumatoid arthritis (RA) mainly affects polyarticular joints and is characterized by inflammation of the synovial membrane leading to joint destruction. We report on an unusual case of RA presenting as an intra-articular mass invading bone of the wrist joint in a patient with chronic monoarthritis. A 43-year-old man presented with left wrist joint pain and swelling lasting several years. A plain radiograph showed a non-specific osteolytic lesion in the distal ulna but a magnetic resonance image demonstrated an intra-articular irregular mass-like lesion with eccentric bone erosion the distal radioulnar joint. Synovial biopsy detected hyperplasia of the synovial lining cell layer and finger-like protrusions of inflamed and edematous fibrovascular stroma containing dense inflammatory infiltrates, mainly plasma cells, B cells, and CD4+ T cells. Rheumatoid factor and anti-citrullinated protein antibody were highly positive. The patient was diagnosed with RA and treated with disease-modifying anti-rheumatic drugs, showing a good response on further follow-up. (J Rheum Dis 2015;22:298-302)

Key Words. Rheumatoid arthritis, Intra-articular mass, Synovial biopsy

INTRODUCTION

Rheumatoid arthritis (RA) is one of the most common chronic, systemic autoimmune diseases, which mainly affects joints and is characterized by inflammation of the synovial membrane that leads to joint destruction [1]. Subchondral bone erosion and cartilage destruction are early features of RA, which mostly involves polyarticular joints. Chronic monoarticular arthritis as a manifestation of RA is not common in the literature with incidence ranging 6% to 17% [2,3]. We report an unusual case of RA presenting as intra-articular mass invading bone of the wrist joint in a patient with chronic monoarthritis.

CASE REPORT

A 43-year-old man was referred to the hospital with complaints of aggravated left wrist pain and swelling of two months’ duration. He had been intermittently treated with oral non-steroidal anti-inflammatory drug at local clinic. The patient had a history of intra-articular joint injection of the left wrist several months prior to visit. He reported onset of symptoms about four years ago, which has been fluctuated with treatment. The patient had no hypertension, diabetes mellitus, viral hepatitis or pulmonary tuberculosis.

He had no fever, and blood pressure was 130/89 mmHg. Erythematous swelling and joint tenderness of left wrist was detected. Otherwise, head and neck, abdomen, chest, skin and other joints on physical examination were unremarkable, and other clinical manifestations suggesting connective tissue diseases were not noticed. Laboratory examination revealed white blood cell count 9,600/mm³, hemoglobin 14.5 g/dL, hematocrit 41.4%, and platelet 266,000/mm³ with an unremarkable blood smear. Erythrocyte sedimentation rate was 29 mm/h and C-reactive
protein was 0.56 mg/dL. Blood chemistry showed total protein 7.3 g/dL, albumin 4.3 g/dL, blood urea nitrogen 13.9 mg/dL, creatinine 1.2 mg/dL, and uric acid 5.8 mg/dL. Liver enzymes and serology for viral hepatitis were unremarkable. Rheumatoid factor (RF) was 172.3 IU/mL (reference 0 to 15 IU/mL) and anti-citrullinated protein antibody (ACPA) was 865.4 U/mL (reference < 5.0 U/mL). Antinuclear antibody was negative. Plain radiograph of left wrist demonstrated radiolucent osteolytic lesion in ulnar head with subjacent resorption of bone. Additional alterations include changes on apposing surface of the distal ends of the radius and ulna at digital end (Figure 1). Magnetic resonance imaging (MRI) showed intra-articular irregular mas-like lesion of left distal ulna including extensive osseous involvement with intense heterogeneous enhancement, and eccentric bone erosion with suspicious overhanging edge at distal ulna and ulnar side of distal radius, which is suggestive of possible gouty arthritis (Figure 2).

The patient was admitted to hospital for diagnostic synovial excisional biopsy because the image finding of the joint did not correspond to clinical pattern of chronic
monoarthritis of the left wrist. Histologic examination with hematoxylin and eosin staining revealed finger-like protrusions of inflamed and edematous fibrovascular stroma which contained dense inflammatory infiltrates, covered by plump synovial tissue of the wrist joint (Figure 3A). Higher magnification showed marked proliferation of synovial lining cells and dense inflammatory infiltrates, predominantly plasma cells and lymphocytes with

![Image of histopathology of synovial tissue (H&E).](image-url)

**Figure 3.** Histopathology of synovial tissue (H&E). (A) Marked synovial hyperplasia with formation of villi (×10) and (B) marked proliferation of synovial lining cells and dense inflammatory infiltrates (arrow), (C) predominantly plasma cells and lymphocytes with germinal center formation (arrow) (B, C: ×200).

![Image of immunohistochemical (IHC) stain.](image-url)

**Figure 4.** Immunohistochemical (IHC) stain of (A) diffuse strong positivity for CD4 and (B) focal patchy positivity for CD8 (×200). Dense lymphocytic infiltrates mainly composed of CD4+ T cells.
Mycobacterium acid-fast bacilli (AFB), and fungi culture was negative. Culture of synovial tissue for bacteria, acid-fast bacilli (AFB), and fungi culture was negative. Mycobacterium tuberculosis (MTB)-polymerase chain reaction revealed negative. Besides, no crystal was observed.

Based on the pathological, clinical and laboratory findings the patient was diagnosed as having RA with intra-articular mass-like lesion invading bone, the score for which was 7 according to the 2010 American College of Rheumatology/European League Against Rheumatism classification criteria for RA. The patient was treated with disease-modifying anti-rheumatic drugs which included methotrexate, hydroxychloroquine and low dose steroid. He continues to be followed in our out-patient clinic with stable disease activity.

**DISCUSSION**

Chronic monoarticular arthritis presents occasionally as an initial manifestation in a variety of diseases, which makes differential diagnosis challenging. Previous studies have shown that the clinical course of chronic monoarthritis is diverse and remains unclassified in 60% to 90% of cases [2-4]. Thus, all possible causes of arthritis including idiopathic, autoimmune, infectious, malignant or traumatic should be considered in the differential diagnosis, and complete history and thorough physical examination are essential [5]. Other clinical manifestations suggesting connective tissue diseases, laboratory data including RF, ACPA, or human leukocyte antigen-B27, X-rays of involved joints, and demographic findings such as age or sex were suggested in the literature for predicting the final course of the condition [3-6]. Septic arthritis related to slow-growing organisms such as MTB and fungi should be also excluded in cases of chronic monoarthritis [7].

Studies have shown heterogeneous results of synovial biopsy usefulness to establish chronic monoarthritis [8-10]. Schwartz and Cooper [8] reported that 59% of cases in which synovial biopsy was performed showed histopathological findings corresponding to clinical manifestation. In one study, synovial pathology of early monoarthritis seemed to differentiate between RA and non-RA. In particular, increased infiltration of plasma cells, B cells and macrophages in synovial tissue was described as a discriminat-
monoarthritis. Similarly, the patient in this case presented non-specific symptoms such as pain with swelling of the joint, and plain radiograph of the wrist did not show typical finding suggesting intra- or juxta-articular mass. Benign synovial proliferating lesions usually demonstrate low signal intensity of the mass on T1-weighed image of MRI. Additionally, the basic histologic findings of these are similar in that the multinucleated giant cells area present in the background of polygonal ovoid mononuclear stromal cells, which is contrary to the relative finding in this case [15]. Synovial biopsy or MRI is helpful to differentiate synovial proliferative lesions.

Mycobacterial species and fungi can also produce indolent, progressive monoarthritis, and tuberculous arthritis most commonly manifests as a monoarthritis [7]. A high index of suspicion is required to establish these diagnoses including immune-compromised status and travel history to endemic area. Synovial fluid culture or synovial tissue pathology and AFB stain and culture are needed for early diagnosis in order to prevent treatment delay [5,7].

SUMMARY

This case presents an unusual case of RA presenting as intra-articular mass-like lesion invading bone of the wrist joint. In evaluating patients with chronic monoarthritis, precise history, thorough physical examination, and radiographs are of great diagnostic value. MRI or synovial biopsy should be considered in evaluation of persistent or refractory chronic monoarthritis and intra-articular mass-like lesion.

ACKNOWLEDGMENTS

This research was supported by the 2014 scientific promotion program funded by Jeju National University.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES