

# Erosive osteoarthritis

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Osteoarthritis (OA) is a degenerative joint disease characterized by the erosion of cartilage joints, hypertrophy of the marginal bone, subchondral sclerosis, and the morphological and biochemical changes of synovial membrane and joint capsule. This clinical syndrome is characterized by joint pain caused by degeneration of the joints. It is the most common joint disease to afflict the elderly and it occurs more often with age.<sup>1-3</sup>

Erosive osteoarthritis is a subset of OA in which there is a destruction of the joints as a result of inflammation.<sup>3,4</sup> Changes mainly occur on the distal interphalangeal (DIP) joints, proximal interphalangeal (PIP) joints, carpometacarpal (CMC) joints, and very rarely occur on other joints of hand or of other body parts.<sup>3-5</sup>

The diagnosis is in accordance with the criteria of American College of Rheumatology (ACR) for OA and is supported by the existence of bone erosion on the radiological image. The management of this disease is merely for palliative purpose.<sup>3,5,6</sup>

## CASE REPORT

A 54-year-old male, works as a teacher, complained of having swollen fingers and pain at the tips of his fingers for eight years. The intensity of pain was increasing, especially when being pressurized. The patient rarely complained of stiffness in his hand. These symptoms did not show up on the joints of any other body parts. There was no fever or skin lesion. Bending motion could be done without any difficulty. He had been on medication but without any significant improvement. The patient claimed to never have suffered any serious illnesses i.e. diabetes mellitus, hypertension, tuberculosis, and high uric acid level. There was also no family history for those illnesses.

The result of physical examination finds the patient in good general condition, *compos mentis*. Blood pressure was 120/70 mmHg, pulse was 80 beats/minute, and he was afebrile. General physical examinations were normal. He had normal gait and normal extremities except on hand (figure 1). On local status, there were findings of Heberden's nodes on left and right DIP II-V joints with tenderness and deviation toward radial of left DIP IV and right DIP V joints. The pain was measured with visual analog scale and gave the score of 5.



**Figure 1** Patient's hand.

Some of the tests conducted, such as pelvic rock sign, lateral compression, single leg raised, Patrick's test, and Schober's test showed negative results.

Laboratory examination showed: hemoglobin 13.5 g/dL, leukocyte count  $8.9 \times 10^3/\text{mm}^3$ , platelet count  $286 \times 10^3/\text{mm}^3$ , erythrocyte sedimentation rate 35 mm/hr, high-sensitivity C-reactive protein (hs-CRP) 2.070 mg/L (normal value <10.000 mg/L), negative rheumatoid factor, negative anti-cyclic citrullinated peptide, uric acid 6.3 mg/dL, aspartate aminotransferase 38 IU/L, alanine aminotransferase 17 IU/L, total cholesterol 195 mg/dL, triglyceride 97 mg/dL, high-density lipoprotein cholesterol 38 mg/dL, low-density lipoprotein cholesterol 130 mg/dL, ureum 19 mg/dL, creatinine 1.2 mg/dL, albumin 3.6 g/dL, and globulin 3.2 g/dL. Urinalysis test showed negative on protein and glucose, and microscopic examination was within normal limit.

Radiological examination showed no abnormalities on the chest X-ray. Pelvic X-ray was also normal along with its sacroiliac joint. Hand X-ray (figure 2) showed luxatio of right DIP IV and left DIP V joints, juxta-articular porosis, and sclerosis of distal of medial phalanx and proximal of distal phalanx of fingers II-V of both hands along with the narrowing of DIP joints of both hands. There was no calcification. Impression is in accordance with the image of bilateral hand rheumatoid arthritis.

Based on the history along with physical and laboratory examinations, the patient was diagnosed with erosive OA and treated with methotrexate 5 mg/week, folic acid 1 mg q.d, 50 mg diclofenac sodium b.i.d, and omeprazole 20 mg q.d.



**Figure 2** Hand X-ray.

## DISCUSSION

Osteoarthritis is the most common form of arthritis, characterized by a slowly progressive degeneration of cartilage joints. Its main predilection is the weight bearing joints. It has a greater prevalence among women and its incidence is increasing with age.<sup>1,3-5</sup> This is the case of 54-year-old male with the symptoms which had been felt on both hands for eight years.

Symptoms commonly felt by patients with OA are joint pains, morning stiffness, or stiffness after resting, usually lasts for less than 30 minutes.<sup>3,5</sup> American College of Rheumatology has developed a diagnostic criteria for hand OA as follows: (1) pain, aching, or stiffness in the hand; (2) hard tissue enlargement of two or more of 10 hand joints; (3) less than three swollen MCP joints; (4) hard tissue enlargement of two or more DIP joints; or (5) deformity of two or more of 10 hand joints. Diagnosis is confirmed by the presence of (1), (2), (3) and (4) or (1), (2), (3) and (5) or (1) plus 3 from (2)–(5). The 10 hand joints referred above are the DIP II & III, PIP II & III, and CMC. By these criteria the sensitivity and specificity for diagnosing hand OA is 92% and 98%.<sup>5</sup> This case met all the criteria.

There are several subsets of osteoarthritis: primary and secondary, local and generalized, hypertrophic and atrophic, inflammatory or noninflammatory, with and without chondrocalcinosis or calcium phosphate crystal deposition, and rapidly progressive.<sup>7</sup> Erosive OA is a primary OA with a more severe inflammation, bone abnormality (erosion), and ankylosis in some cases. Kellgren and Moore was the first to describe this condition in 1952. At first, the term inflammatory OA was used to emphasize the commonly encountered clinical symptom, i.e. the inflammatory process, but now the more commonly used term is erosive OA.<sup>8-11</sup>

Erosive OA is a rare type of OA. It is found commonly on postmenopausal women. Genetic factors also play role: HLA DR2 is a suspected risk factor for erosive OA.<sup>8,11,12</sup> Erosive OA began with a sudden pain accompanied by stiffness in the morning of the DIP joints, which then spreads to the PIP joints, commonly symmetrical, while regular OA is usually slow and generalized. It rarely afflicts foot joints or any other large joints.<sup>3,8,9</sup> Laboratory findings are generally nonspecific

although there are reports of a higher CRP level in erosive OA than in a regular OA.<sup>8,9,13</sup> This case occurred in a 54-year-old male and afflicted the DIP joints II-V on both hands. Laboratory results were within normal limits.

Radiological finding of erosive OA are periarticular osteoporosis and subchondral erosion. In contrast to the erosion of rheumatoid arthritis that occurs in the marginal, erosion in erosive OA occurs in the central, accompanied by marginal proliferation resulting in a “gull-wing” appearance. In psoriatic arthritis, marginal erosion also occurs along with marginal periostitis. The patient’s hand X-ray showed evidence of bone erosion and juxta-articular osteoporosis.<sup>3,8</sup>

Differential diagnoses of erosive OA are rheumatoid arthritis and psoriatic arthritis. This case had similar radiological image with rheumatoid arthritis but afflicts the DIP joints and showed neither symptoms nor signs supporting the diagnosis of rheumatoid arthritis or psoriatic arthritis.<sup>3</sup>

Currently there are no standard treatments for erosive OA so that the first treatment recommended is similar to those of regular OA, pharmacological and non pharmacological. The recommended pharmacological therapy is simple analgesics, nonsteroidal anti-inflammatory drugs, and intra-articular and topical steroid.<sup>5,6</sup> For cases less responsive to standard therapy, it can be considered administering methotrexate, hydroxychloroquine, or anti-TNF $\alpha$ . Several studies have reported satisfactory result with these drugs.<sup>10,14,15</sup> The patient in this case was given doses of methotrexate 5 mg/week, folic acid 1 tablet q.d., diclofenac sodium 50 mg b.i.d., and omeprazole 20 mg q.d.

## SUMMARY

We reported a case of erosive osteoarthritis, which is a subset of OA. The diagnosis of hand OA is based on ACR criteria and supported by the radiological image in the form of subchondral erosion and juxta-articular osteoporosis. There are currently no standard treatments for erosive OA, and this patient was administered with doses of methotrexate, diclofenac sodium, folic acid, and omeprazole.

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