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Case Study

# Erosive Osteoarthritis: A Rare Case Report

**Harshil Gadhiya*, Yash Radhanpura, Pravin Tirgar**

*Department of Pharmacology, School of Pharmacy, RK University, Rajkot, Gujarat, India*

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ABSTRACT

Osteoarthritis, also known as OA, is a type of joint degeneration characterized by changes in the morphology and biochemistry of the synovial membrane and joint capsule, as well as degradation of the cartilage joint and expansion of the marginal bone. Inflammation causes the joints to deteriorate in a subtype of osteoarthritis called erosive OA. Distal interphalangeal (DIP), proximal interphalangeal (PIP), and carpometacarpal (CMC), and metacarpophalangeal (MCP) joints are the most often affected joints in the hand. Other joints in other body regions are extremely seldom affected. Our patient's diagnosis report suggests erosive osteoarthritis and seronegative arthritis as negative anti-RF factors.

## Introduction

Erosive osteoarthritis (EOA), a clinical condition, is a significant and clinically difficult form of hand osteoarthritis. Peter et al. used the phrase "erosive osteoarthritis. (EOA) for the first time in 1966.[1] The term "erosive osteoarthritis" highlights the juxta-articular erosions that might replicate rheumatoid arthritis in people who do not meet any of the conventional criteria for traditional or definite rheumatoid arthritis.[2] Compared to those who have rheumatoid arthritis, those who have EOA are not experience stiffness in the morning, loss of weight, or systemic signs such as fever. They do not have any subcutaneous nodules. The ESR is usually normal or slightly raised, but the latex agglutination test for rheumatoid factors is consistently negative. The disease's course, while unpredictable, is self-destructive and does not spread to other parts of the body. It is also not significantly affected by any kind of therapy other than surgery.[3]

In real life, radiographic abnormalities, including erosions or central cortical collapse, are frequently used to diagnose EOA. Osteophytes, subchondral cyst growth, periarticular oases, along with more rarely, subluxations and ankyloses, may occur together with these.[4] Clinical signs of EOA include deformities, erythema, swelling of the joints, a rapid onset of significant hand pain, and varying degrees of stiffness. Some studies speculate that EOA individuals might be more youthful than those with normal hand OA; however, it is difficult to interpret the epidemiology because there are no recognized criteria for EOA.[4] EOA diagnosis is currently difficult. The most prevalent inflammatory arthritides are disease mimics. We found that the definition of illness varied significantly across the EOA journals we reviewed. Inconsistent illness descriptions make it impossible to fully comprehend many of the important components of EOA and make diagnostic procedures more difficult. A clear illness description is also necessary for the interpretation of recently discovered

***Corresponding Author:** Mr. Harshil Gadhiya

**Address:** Department of Pharmacology, School of Pharmacy, RK University, Rajkot, Gujarat, India

**Email** ✉**:** harshilgadhiya2812@gmail.com

**Tel.:** +91-9429888050

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biomarkers, enhanced imaging techniques, including ultrasonography, and sophisticated genetic studies.[5]

## Clinical Report

A 28-year-old man was diagnosed with erosive osteoarthritis (EOA) with symptoms including swelling with pain in the right wrist, pain in the second and third metacarpophalangeal joints (MCP), the ability to hold things in hand with difficulties in hand movement, etc. The patient has no history of prior trauma or psoriasis, and no significant weight loss was found. No family history, past medical history, or social history were noted.

On examination, we found the patient had significant swallowing in the wrist as well as decreased hand movement.

### Investigations

*Arthritis-specific test*

The anti-CCP antibody found is in the normal range of 10.32 U/mL; the rheumatoid factor is negative; and the CRP test is positive in the 41.6 mg/L range. So, it suggests seronegative arthritis.

The bone marker suggests a very low level of vitamin D3 (8.73 ng/mL).

The patient's CBC report suggests decreased hemoglobin (11.6 g/mL), elevated PLR (Plt.-Lympho. Ratio) (222.3%), elevated microcytes (398.8%), decreased macrocytes (1.1%% and high ESR (17 mm).

*Imaginary test*

As shown in (Fig. 1) CT scan of the right hand with the wrist joint finds joint space reduction with marked synovial thickening, and multiple subchondral erosions are seen involving the radioulno-carpal, all intercarpal, second-third carpometacarpal, and second-third metacarpo-phalangeal joints.

This report suggests erosive arthritis.

### Differential Diagnosis

- Erosive osteoarthritis
- Seronegative arthritis

## Treatment

The patient's pharmacological strategies include tab methotrexate (7.5 mg twice a week), tab HCQs (200 mg once a day), Tab etoricoxib (60 mg twice a day), and Tab folic acid (5 mg twice a week) with an alternate day of taking tab methotrexate.

## Discussion

EOA is a chronic condition that progressively damages the hand's interphalangeal joints as an inflammatory type of osteoarthritis. The majority of patients, whether or not they have Heberden and Bouchard's nodes, frequently experience discomfort, edema, redness, heat, and impaired mobility in the hand joints. On traditional

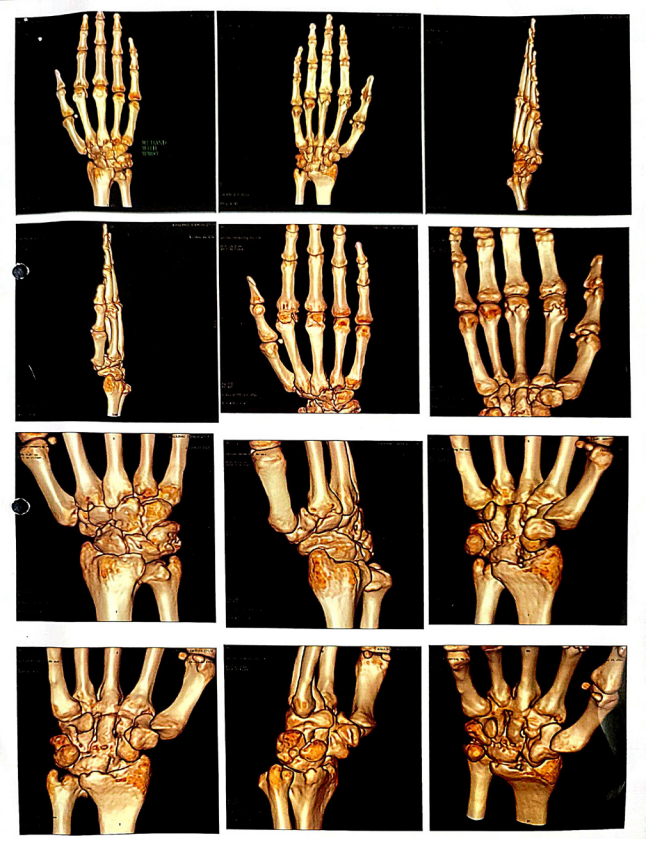

**Fig. 1:** CT scan of right wrist

radiographs of the hands, bone growth and erosions are combined to produce the distinctive "gull-wing" as well as "saw-tooth" abnormalities among the afflicted joints. Radiographic characteristics still have diagnostic relevance in addition to clinical presentation because there are no differentiating test results between EOA and other prevalent erosive interphalangeal arthropathies.[6]

The negative results from the RF or anti-CCP tests in our patient made the finding of RA less plausible and supported the diagnosis of EOA. Further supporting the diagnosis of EOA were recognizable radiographic features such as bone loss, subchondral sclerosis, or core damage having "gull-wing" and "sawtooth" appearances. Oases, subchondral sclerosis, or central erosion are uncommon in RA.[7]

During diagnosis purpose, doctors examine patterns of joint ache, inflammation, or the types of afflicted joints to determine whether or not an individual has EOA. The illness often affects the tips of both fingers, which seldom experience the consequences with RA. For example, RA frequently impacts the knuckle joints, while EOA does not, although both conditions can affect the middle finger joints. Over time, EOA impairs the hand's movement and can result in anomalies. A healthcare expert will examine a patient's medical history as well as X-rays of the afflicted hand to detect symptomatic bone erosions. An MRI and ultrasound can also help detect soft tissue injuries. A doctor may do blood tests to rule out RA and evaluate the

ESR, indicating the existence of inflammation in the body. Inflammation should be limited to the joint rather than spreading throughout the body.[8]

### X-rays or Other Testing Might also Reveal

A negative RF, an inflammatory molecule that destroys healthy cells, causes local inflammation in the afflicted joint, central bone erosions, and bony growths known as osteophytes. Possible conditions include subchondral cysts (bone cysts beneath the cartilage), partial dislocations (subluxations), bone fusion (ankyloses), and joint space constriction. Bone erosion can take the appearance of gull wings or sawteeth, which is a common aspect of this illness. EOA can also impair a person's everyday life and ability to work.[8]

A common symptom of EOA is severe interphalangeal joint degeneration with somewhat sparing MCP joints. The lack of bone degradation within the MCP joints of EOA is a key indicator of the separation of the later phases of RA from it. The MCP joints in EOA occasionally have degenerative alterations, although these changes are not correlated with surface erosion. Although RA-induced erosions in these joints are frequently obvious, the patient's MCP joints, including wrists, were preserved, which is consistent with EOA.[9]

There are no current recommendations for the ideal treatment strategy for EOA. The few therapies that are readily available are analgesics, NSAIDs, and intra-articular corticosteroid injections. Drugs treating OA symptoms with a slow onset they have also investigated in EOA. The most common was chondroitin sulfate, with several studies showing that it was effective in reducing symptoms and slowing the advancement of radiological illness.[10]

Unfortunately, all of the treatment alternatives discussed above may fall short of expectations. According to reports, hydroxychloroquine is effective in reducing EOA-related pain and inflammation. However, there aren't any controlled, prospective trials to evaluate the effectiveness of hydrochloroquine during the radiological and clinical development of EOA. Anti-TNF medication has reportedly been shown to be a successful technique for treating EOA. A pilot investigation revealed that intra-articular infliximab may have disease-modifying effects in EOA of the hand in addition to its clinical effects.[11, 12]

## Conclusion

According to our case studies, erosive osteoarthritis is very symmetrical and mostly affects the distal interphalangeal (DIP) joints were used instead of the most proximal interphalangeal (also known as PIP) joints. It is associated with EOA turning into a more severe form of hand OA instead of a separate entity, as the incidence and analysis of joint involvement through EOA are equivalent to those reported for moderate-to-severe non-erosive imaging osteoarthritis. EOA may be linked to metabolic exposure, specifically dyslipidemia.

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