

INSUFFICIENCY FRACTURE IN RHEUMATOID ARTHRITIS: A CASE REPORT

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ABSTRACT

Rheumatoid arthritis (RA) can lead to insufficiency fractures due to bone weakness associated with the disease and its pharmacologic management. We report a 56 year old female with three weeks history of progressive non-traumatic pain and swelling in her right leg with inability to bear weight. X ray revealed a healing fracture of the lower third of right tibia and fibula. She had been using steroids for two years and currently was on methotrexate (MTX). Her serum vitamin D levels were sub-optimal. She was managed with POP back slab and immobilization for four weeks, vitamin D replacement therapy and rehabilitation. She was asymptomatic on follow up visit. Insufficiency fractures should be suspected in RA as they are often missed, leading to increased morbidity since the symptoms mimic disease relapse. Bone scan, CT scan, Magnetic resonance imaging can help in early diagnosis as X rays may appear normal initially.

KEY WORDS: Insufficiency Fracture, Rheumatoid Arthritis, Pakistan, Osteoporosis.

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INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disorder affecting multiple systems. The use of disease modifying anti-rheumatic drugs (DMARDs), steroids and inflammatory nature of disease renders an individual vulnerable to different complications.¹ One of the complications is inherent bone weakness, osteopaenia, and osteoporosis leading to insufficiency fractures.² Insufficiency fracture can cause significant morbidity in patients with RA. Insufficiency fractures develop in 0.8% of RA patients.³ The common sites include pelvis, tibia, fibula, humerus and femur, and rarely ulna, metatarsals, vertebrae,

carpal bones, talus⁴ and calcaneum⁵ can be involved as well. Past use of steroids especially in high doses makes one vulnerable to insufficiency fracture.¹ In RA insufficiency fractures⁵ are due to repeated normal stresses on an already weakened bone, in contrast to the stress fractures in which increased stress and repetitive motion forces applied on a structurally normal bone cause fractures.⁶ Insufficiency fractures may present as localized pain, tenderness and swelling in the affected area. These symptoms are similar to the disease activity and can be misleading. Plain radiographs taken early in the condition might not reveal any abnormality. Diagnosis of insufficiency fracture is often delayed due to pattern

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of pain in the disease and the presenting symptoms.⁷ Early diagnostic modalities include triple phase bone scan, CT and MRI along with a high index of clinical suspicion. Most of the patients require conservative management with POP and immobilization.⁸

We report a case of insufficiency fracture in 56 year old female patients with rheumatoid arthritis who presented with three weeks history of progressive non-traumatic pain and swelling in her right leg with inability to bear weight.

CASE REPORT

A 56 Years old lady having RA for the last 20 years, presented with three weeks history of non-traumatic and progressive pain and swelling in the right leg. Pain increased with weight bearing. Considering it a relapse of diseases, she increased her NSAIDs without relief. She sought medical advice when she was unable to take few steps. She had used 10 mg of dactacortil daily for two years but had discontinued it one year back. She was on MTX (12.5 mg weekly) for the last three years. Before that she had been under treatment of multiple GPs and had been using different NSAIDs for her pain relief for the last two decades but there was no prior history or documented use of DMARDs or steroids. Examination revealed mild swelling, localized tenderness and raised temperature at the lower third of right tibia. No other joint was swollen or tender. Her serum calcium, phosphate and alkaline phosphatase levels were normal while



Figure 1: Healing fracture right tibia & fibula in rheumatoid arthritis

vitamin D levels revealed mild deficiency. Other biochemical investigations including CBC, urine examination, renal and liver function tests, and cholesterol were normal. X ray of the right leg revealed an undisplaced healing transverse insufficiency fracture at the distal third of tibia and fibula (Fig 1). Her DEXA scan done after the current event, revealed a T score of -1.8 in osteopenic range. POP back slab was applied and the patient was asked to avoid weight bearing for 4 weeks. Mobilization and weight bearing was started as per patient tolerance and the patient recovered completely within 6 weeks.

DISCUSSION

The prevalence of RA is estimated to be 1%.³ The risk for fractures in rheumatoid patients is double that of the normal population.⁹ Possible causes include inflammatory nature of the disease affecting the bones, osteoporosis, bone deformities in joints causing abnormal biomechanical stresses leading to fractures, prolonged use of steroids and methotrexate osteopathy.¹⁰ Other factors include thin stature, decreased

mobility, low vitamin D levels, old age, long standing aggressive arthritis and early age at diagnosis of RA.

Secondary osteoporosis is one of the main abnormalities in RA affecting both cortical and cancellous bone. It causes juxta-articular osteopaenia due to increased bone turnover leading to increased bone resorption. The secondary bony deformities are another risk factor for fractures. The mean bone mass density in RA patients falls by 2.5% to 5.5% over two succeeding years.¹¹

The risk of fractures is two times more in patients affected with rheumatoid arthritis. The predisposition of insufficiency fractures is also high. The diagnosis of insufficiency fracture in RA is often difficult as it might mimic disease flares, osteomyelitis and cellulitis. X Rays in the early phase are usually not helpful. CT scans, bone scans and MRI can help in early detection if clinically suspected.² The diagnosis can be missed by the patient and the attending physicians considering it to be a disease flare. There is an average delay of 3-4 weeks between the initial symptoms and diagnosis causing significant morbidity for the patient.⁵ In

our case, delay in the diagnosis was due to the patient attributing her symptoms to acute disease flare. She sought medical advice only when she was unable to bear weight on the affected leg. The possible contributory factors in this case were age, low vitamin D level, use of steroids and methotrexate therapy. All these are known to cause increased fracture susceptibility in RA cases⁶.

Similar case report of two non-traumatic bilateral tibial fractures in rheumatoid patient has been reported by Conway R¹¹, neither of his patients had history of using steroids but both were on methotrexate and one of them was treated with Adalimumab. One of the patients was osteoporotic and other was osteopaenic similar to our case.

In a study by Kay et al¹, the increased risk of fractures in RA was not attributable to osteoporosis as assessed by BMD, while the use of high dose steroids was contributory to the risk of insufficiency fracture irrespective of BMD. In Finland, a threefold increased risk of hip fracture was demonstrated in patients with rheumatoid arthritis by Huusko et al.⁹ Apart from insufficiency fractures, overall fracture risk has been reported to be increased for patients with rheumatoid arthritis especially in proximal and distal femur and hip area with increased mortality rate by 26%.¹²

To the best of our knowledge and an online electronic literature search it is the first case reported of insufficiency fractures in rheumatoid arthritis being reported in Pakistan. Keeping in view the overall prevalence of RA and the possible 0.8% of them getting insufficiency fractures, the risk and possible morbidity cannot be ignored in our country.

Following key points are emphasized:

- I. In a case of RA If steroids are prescribed at an equivalent dose of > 7.5 mg per day of Prednisolone for

- >3 months then Calcium and Vitamin D must be co-prescribed.
- Insufficiency fractures in RA are not uncommon but difficult to diagnose initially.
 - There should be a high index of suspicion for insufficiency fractures in patients with RA presenting as pain and swelling in areas adjacent to and other than joints.
 - The missed or delayed diagnosis can result in significant morbidity.
 - Bone scan and MRI can aid in early detection.
 - Patients with RA arthritis should be screened for osteoporosis and vitamin D deficiency and treated accordingly.
 - Osteoporosis prevention programmes should be followed in patients diagnosed with RA.

CONCLUSION

Insufficiency fractures should be suspected in patients of RA especially if

painful areas are other than joints. They cause significant morbidity. The common sites are around foot, ankle, knees and pelvis. Patients on previous use of high dose steroids and methotrexate, severe osteoporosis and bone deformities are at increased risk for fractures.

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CONFLICT OF INTEREST

Author declares no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE

NIL

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