



## RESEARCH ARTICLE

### HOW RHEUMATOID ARTHRITIS CAN DEFORM YOUR LIFE: A CASE PRESENTATION

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#### ABSTRACT

Rheumatoid arthritis (RA) is a subset of arthritis, defined as chronic, inflammatory, systemic autoimmune disease, affecting the joints. It is commonly described by distinctive pattern of bone and joint destruction and is a major cause of disability in mid age group population. The incidence and prevalence of RA vary in terms of age, gender, and population. Early detection of RA plays a key role in restorative success, especially with autoantibody positivity, high disease activity and early bone erosion. RA is a complex disease which is a result of interplay between genetic and environmental factors. The main genetic factor which is involved in RA is HLA-DRB1. The environmental factors which act as predisposing factors for RA are cigarette smoking, occupational hazards, or air pollutants. As for now, the treatment primarily focuses to reduce pain and slow or stop any further damage to joints/bone. Here in we set forth a case of a patient with multiple joints involvement due to rheumatoid arthritis with characteristics of bone deformity in both upper and lower limb.

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## INTRODUCTION

Rheumatoid arthritis (RA) is a form of arthritis. It is described a chronic, inflammatory, systemic autoimmune disease that originally affects the small joints in the body, later affecting larger joints if left untreated. The bones and cartilage of the affected joint are completely damaged and the ligament and tendon surrounding it also weakens. In later stages, extra-articular manifestations in lungs, heart, kidneys are also seen<sup>[1]</sup>. The incidence rate of RA in higher-income countries is found to be 0.5-1 %. It is more found in women and old-aged people<sup>[2]</sup>. The interaction of genetic and environmental factors such as smoking, tobacco plays significant role in the onset of RA which initially involves peripheral synovial joints<sup>[3]</sup>. In patients with RA, there is a significant damage to the joints leading to bone erosion and deformities which causes excruciating pain for them. The clinical symptoms usually include morning stiffness in the affected joint for about 30 mins or more, weight loss, fever, fatigue, and rheumatoid nodules under the skin. The inflamed joint is generally red, warm, tender, and swollen. This disease is generally found in people of age group between 35-60 years which can also be related to remission and exacerbation.

It can also be found in young population below the age of 16 years, which is termed as juvenile RA<sup>[4][5][6][7]</sup>. As there is no cure for RA as of now, the goal of treatment for patients with RA is early diagnosis of disease and early intervention to prevent further irreversible damage to joints and disability. The early diagnosis is solemnly dependent on clinical details collected from the patient's history, general physical examination followed by blood tests and imaging procedures<sup>[8][9]</sup>. Here in, we present an 80 years old male, with chief complaints of shortness of breath and bilateral ankle pain, previously diagnosed with RA.

## CASE REPORT

An 80 years old male patient with the medical history of rheumatoid arthritis and COPD presented with the complaints of shortness of breath and bilateral ankle pain due to arthritis. Few years back, he observed leg deformity bilaterally, for which he visited an orthopaedic doctor. He was later diagnosed with rheumatoid arthritis. He was prescribed medications for the same, which he did not follow routinely. He took pain relieving medications from a local practitioner several times, the documents of which he could not provide.



Due to his irregular treatment, his arthritis progressed worsening his condition, damaging other joints of the body, ultimately taking over both the limbs. The progression causes severe hand deformities and extra articular manifestations such as interstitial lung diseases (ILD) and COPD. On general physical examination, he had following deformities

#### UPPER LIMB DEFORMITIES

- Ulnar deviation
- Boutonniere deformity
- Piano key deformity
- Intrinsic key deformity

#### LOWER LIMB DEFORMITIES

- Mallet toe
- Hallux Valgus
- Claw toe
- Pes Planus
- Talipes Valgus
- Crossover toe

Other than deformities in both upper and lower limbs, generalised oedema, and slight ecchymosis on posterior-inferior aspect to knee joint indicating synovial rupture was also seen, which is suggestive of chronicity and high activity of disease. Imaging analysis of affected joint was done to check for bone erosion. As for the complaints of shortness of breath, ABG, ECG and chest radiography was done. The lab reports are as follows



**Intrinsic key deformity**

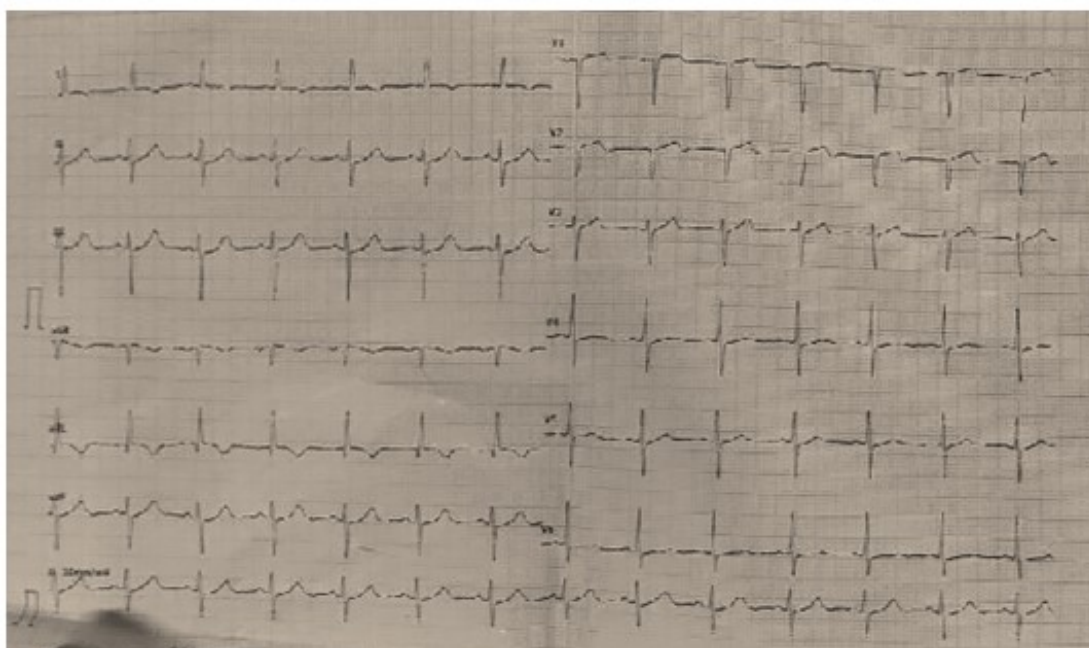




Crossover toe



Claw toe & Talipes Valgus



ECG



As the patient refused any surgical intervention due to his old age, physiotherapy was prescribed along with medications for symptomatic relief. He was started on proper medication to prevent any further damage.

#### Piano key deformity

Labs	Results
Hb	10.0gm/dL
TLC	8420/C $\mu$ mm
Platelet count	150000/mm <sup>3</sup>
RBC count	4.02 million/mm <sup>3</sup>
HCT	32.0%
MCV	79.5fL
MCH	24.9pg
MCHC	31.3gm/dL
RDW-CV	16.5%
ESR	45mm/hr
RA factor test (Latex agglutination)	Negative
Anti – CCP test	Positive
ABG	pH = 7.42, pCO <sub>2</sub> = 33.5mmHg
ECG	Left axis deviation
Albumin	2.96gm/dL



## DISCUSSION

Rheumatoid arthritis is a chronic multisystem autoimmune inflammatory disease which affects connective tissue, majorly small joints of upper and lower limb. It is a most common inflammatory disorder that causes disability in mid aged group population all over the world. The prevalence rate of RA is 0.75% in India, 0.46% in US and 1% worldwide. As per research done by National Rheumatoid Arthritis Society, England, it can shorten up your life span up to 10 years and extra articular manifestation like pulmonary and cardiac disease are a major contributor to it as seen in research by John Hopkins Rheumatology Centre. This rises an alarming need for early diagnosis and treatment of RA to decrease morbidity and mortality.

As for our patient, the disease manifested first with foot deformity which is common in around 78.8% patients observed in similar researches in Turkey. It eventually involved other joint of upper limb causing deformities like ulnar deviation, boutonniere deformity, hitchhiker's thumb etc. The patient had multiple deformities coexisting simultaneously in different phalanges with varying severities, cases like which were seen in Japan. Persistent inflammatory process and irregular medications led to permanent deformity and disabling. As the patient was chronic smoker, which is a major predisposing factor, respiratory manifestations also occurred such as ILD and COPD. Due to lack of awareness and knowledge about the disease and inability to receive proper treatment and medication on time, he has such severe deformities making him unable to do even his routine work. Hence, early diagnosis and proper medications plays a vital role in the prevention of progression of disease.

## CONCLUSION

Rheumatoid Arthritis is the most common inflammatory condition in India, commonly seen in old age. It is rare in young age and is mostly present due to sedentary life cycle and obesity. The disease progresses if left untreated, increasing morbidity and mortality. A problem which is highly significant in India due to lack of awareness and basic knowledge in common people, inability to diagnose symptoms by both the patient and doctor and even after diagnosis, inability to receive the treatment due to socio-economic condition or personal beliefs. The symptoms of arthritis in about 15% of the patient come and go, masking the diagnosis. The prevalence of arthritis in India is 0.75% but with so many undiagnosed cases the actual number might be way more than that. As no treatment is received, disease advances with time leading to more severe deformities hindering mobility and often leaving the patient bedridden by the time patient reaches old age. Along with deformities extra articular manifestation also occur, which are the cause of death in most patient. The timely diagnosis can help all this patient and avoid such severity and giving a better life to all these patients.

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