



PREVALENCE OF BONE FRACTURES IN RHEUMATOID ARTHRITIS PATIENTS

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ABSTRACT

This original research article investigates the prevalence of bone fractures in individuals diagnosed with rheumatoid arthritis (RA) and explores associated risk factors and patterns of fractures. A cohort of 80 RA patients, predominantly female (88.7%), with a mean age of 52 years, was studied. Disease duration varied, with 35% experiencing RA between 2-5 years of diagnosis. Common risk factors, including family history of rheumatoid arthritis and osteoporosis, as well as smoking, were assessed. Site-specific distribution of bone fractures was analyzed, and the relationship between corticosteroid use duration and fracture incidence was explored. The study identified a diverse temporal spectrum of RA, with a notable proportion experiencing the disease within 2-5 years of diagnosis. Despite the majority having no identified risk factors, familial connections to osteoporosis (12.5%) and rheumatoid arthritis (7.5%), along with a small percentage of smokers (2.5%), were observed. The site-specific distribution of bone fractures revealed spinal vertebrae, hips, carpal bones, and peripheral sites as common locations. Notably, 22% of RA patients experienced fractures due to falls. The relationship between corticosteroid use duration and fracture incidence exhibited varying rates across different periods. This study provides a comprehensive understanding of the prevalence and associated factors of bone fractures in RA patients. The findings underscore the multifactorial nature of fracture susceptibility in this population and emphasize the need for personalized risk assessments and targeted interventions to improve skeletal health in individuals living with rheumatoid arthritis.

Keywords :- Rheumatoid arthritis, Bone fractures, Prevalence, Risk factors.

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INTRODUCTION

Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by systemic inflammation, joint pain, and progressive joint destruction. While the primary focus of RA research traditionally revolves around joint pathology, emerging evidence suggests a substantial impact on the skeletal health of affected individuals. Recent studies have drawn attention to an increased susceptibility to bone fractures in RA patients, challenging the prevailing notion that

bone fractures are solely associated with osteoporosis or aging [1-3].

The complex interplay between chronic inflammation, altered bone metabolism, and the use of disease-modifying antirheumatic drugs (DMARDs) in RA patients creates a unique milieu that may contribute to an elevated risk of fractures [4-5]. Understanding the prevalence and patterns of bone fractures in this population is crucial for optimizing clinical management and implementing preventive strategies

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Despite the growing recognition of this issue, a comprehensive analysis of the prevalence of bone fractures in RA patients is notably lacking [6-7]. This original research seeks to address this gap by conducting a thorough investigation into the occurrence of bone fractures in a diverse cohort of individuals diagnosed with rheumatoid arthritis.

The primary objectives of this study are twofold: firstly, to determine the overall prevalence of bone fractures in RA patients, encompassing both major fractures, such as hip and vertebral fractures, and minor fractures affecting peripheral joints; and secondly, to identify potential risk factors associated with increased fracture susceptibility within the RA population.

Through a systematic review of medical records, imaging studies, and patient-reported data, we aim to provide a comprehensive overview of the burden of bone fractures in individuals with rheumatoid arthritis [8-9]. This research not only contributes to our understanding of the skeletal complications in RA but also holds implications for the development of targeted interventions aimed at reducing fracture risk and enhancing the overall quality of life for individuals grappling with this debilitating autoimmune condition.

MATERIALS AND METHODS

This study is a Cross sectional pilot study conducted in the hospital of Sri Lakshmi Narayana Institute of Medical sciences, Pondicherry for a period of eight months. The patients who attended the ortho ward are provided with a questionnaire about our research article and this is reviewed by our Rheumatologist and medical Officer to see the reliability. Study was conducted among 80 individuals who attended the clinic with rheumatoid arthritis.

Inclusion criteria:

Patients with age group of 18- 50 years with rheumatoid arthritis who consecutively attend the hospital in rheumatology clinic for routine follow up are included in our study.

Exclusion criteria: Patients below 18 years, Rheumatologic disease, Post-menopausal women, hyperthyroidism, hyperparathyroidism, Cushing's syndrome and also patients who refused to involve in this study are also excluded from our study.

Written informed consent was taken from every patient by explaining the purpose of the study and ensures the confidentiality of the information to the participant. Questionnaire is in form of Multiple choice questions with demographic information regards their (age, sex, Occupation, and social habit) and also it is

about onset, duration, risk factors of rheumatoid arthritis disease [10-12].

Data analysis:

Examined about age, sex, and risk factors, duration of disease and fracture, diagnostic tools, prevalence, management, and the site of fracture. Statistical significance was defined as $P < 0.05$. Analyses were performed using SPSS, Version 20.0.

RESULTS

Rheumatoid arthritis is a chronic autoimmune disease which affects more commonly in female than men. Out of 80 individuals 9(11.2%) are men and 71(88.7%) are females. mean age is about 52 years. Duration of rheumatoid condition in the most of the patients (35%) was between 2-5 years of diagnosis as in (Table 1). In this study different common Risk factors were considered included family history of Rheumatoid arthritis and osteoporosis, smoking. Although 63.9% had no risk of that study was considered, 12.5% of patients were having a family history of osteoporosis, other 7.5% with a family history of rheumatoid arthritis, 2.5% were smokers (Table 1).

Loss of bone mass and Osteoporosis were considered as one of the major RA complication, 22% of RA patients in this study experienced bone fracture because of falling down.

Table 1: General characteristics, Duration, risk factors and duration of management.

Characteristics	Values
Gender	
Men	9
Women	71
Total mean of age	52 years
Mean for men	47
Mean for women	52
Duration of disease	
< 2 years	12 (15%)
2-5 years	28(35%)
5-10 years	10(12.5%)
>10 years	19 (23.7%)
Risk factors	
Smoking	2 (2.5%)
Family history of osteoporosis	10(12.5%)
Family history of RA	6(7.5%)
Duration of management	
< 2 years	21(26.5%)
2-5 years	18(22.5%)
>10 years	19 (23.75%)

Table 2: Site of bone fracture in Rheumatoidpatients

Fracture sites	Number (%)
Spinal vertebra	3(3%)
Hip	6(7%)
Carpal	5(6%)
Tibia	2(2%)
Radius	2(2%)
Humerus	1(1%)

Table 3: relation between use of corticosteroids and incidence of bone fracture

Duration of management with corticosteroids	With fracture	Without fracture	total
< 2years	3 (20%)	12(80%)	15
2-5 years	6(37.5%)	10(62%)	16
>5years	8(40%)	12(60%)	20

Figure 1: Spinal vertebra fracture**Figure 2: Proximal humerus fracture**

DISCUSSION

The present study delves into the intricate relationship between rheumatoid arthritis (RA), bone fractures, and various associated factors. The demographic distribution within the studied cohort echoes established epidemiological patterns, with a notable predilection for females (88.7%) over males (11.2%)—a characteristic hallmark of rheumatoid arthritis. The mean age of approximately 52 years aligns with the typical onset of RA, underscoring the relevance of this research to the population affected during their middle-aged years [13-15].

A lot of clinical studies especially Xue and Van et al., that Osteoporosis incidence increased two times among RA patients in comparison to non-RA patients. The duration of rheumatoid condition among the participants exhibits a diverse temporal spectrum, with a significant proportion (35%) experiencing the disease within the 2-5 year range since diagnosis. This nuanced

characterization of disease duration is crucial, as the risk and impact of bone fractures may vary at different stages of the disease course [16-17].

The study incorporates a comprehensive exploration of common risk factors associated with both rheumatoid arthritis and bone fractures. Despite the majority of participants (63.9%) not presenting with identified risk factors, a subset of individuals demonstrated a familial connection to osteoporosis (12.5%), family history of rheumatoid arthritis (7.5%), and a smaller percentage of smokers (2.5%). This highlights the multifactorial nature of the interaction between genetic, environmental, and lifestyle factors in shaping the outcomes of rheumatoid arthritis, emphasizing the need for personalized risk assessments [18-19].

The study provides valuable insights into the site-specific distribution of bone fractures in rheumatoid patients. Spinal vertebrae, hips, carpal bones, and other

peripheral sites are implicated, with varying percentages. The finding that 22% of RA patients in this study experienced bone fractures due to falls underscores the critical relationship between loss of bone mass, osteoporosis, and the increased vulnerability to fractures in this population [20-21].

The discussion on the relationship between the duration of corticosteroid use and the incidence of bone fractures, adds a layer of complexity to the management of rheumatoid arthritis [22-23]. The data suggest varying fracture rates across different durations of corticosteroid use, highlighting the importance of a nuanced approach to medication management in RA to balance disease control and potential side effects.

As with any study, it is essential to contextualize these findings within the existing body of literature. Reference to established research studies is critical for a comprehensive understanding of the broader implications of the current findings. Future research findings may

further explore the interplay between risk factors, disease duration, and medication use, ultimately guiding the development of targeted interventions aimed at reducing the incidence of bone fractures in individuals living with rheumatoid arthritis.

CONCLUSION

This research provides valuable insights into the prevalence and risk factors associated with bone fractures in individuals with rheumatoid arthritis. The findings underscore the multifactorial nature of fracture susceptibility in this population, paving the way for further investigations and targeted interventions to improve the skeletal health and overall well-being of individuals living with RA.

Foot note:

Conflict of interest: None

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