

Analysis of Prevalence of Acute Myocardial Infarction in Patients with Rheumatoid Arthritis at a Tertiary Care Hospital

Manoj Kumar Sahani¹, Arun Kumar Anuragi^{2*}

¹Associate Professor, ²Professor, Department of General Medicine, Rama Medical College Hospital & Research Centre, Pilkhuwa, Hapur, Uttar Pradesh, India.

ABSTRACT

Background: Rheumatoid arthritis (RA) is associated with increased mortality, which is predominantly due to accelerated coronary artery and cerebrovascular atherosclerosis. The objective of the present study was to assess the Prevalence of acute myocardial infarction in patients with rheumatoid arthritis.

Materials and Methods: This prospective study was carried out to assess the prevalence of acute myocardial infarction in patients with rheumatoid arthritis. 300 patients with a confirmed diagnosis of RA were included in this study. Demographic factors including age, past and family history of MI were noted using a self-structured questionnaire. Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) v. 23.0 (IBM Corporation, Armonk, New York, USA). A p-value of less than 0.05 meant that the difference between the groups is significant and the null hypothesis is void.

Results: In the present study, 300 patients with a confirmed diagnosis of RA were included in which 52% were females and 48% were males. The mean age of patients was 46 years. 5% patients had previous history of MI and 6% patients had family history of MI. 12% RA patients had non-fatal MI and 3% RA

patients had fatal MI. In 85% RA patients MI was absent.

Conclusion: The present study concluded that 12% RA patients had non-fatal MI and 3% RA patients had fatal MI.

Keywords: Acute Myocardial Infarction, Rheumatoid Arthritis, Prevalence.


*Correspondence to:

Dr. Arun Kumar Anuragi,
Professor,
Department of General Medicine,
Rama Medical College Hospital & Research Centre,
Pilkhuwa, Hapur, Uttar Pradesh, India.

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INTRODUCTION

Rheumatoid arthritis (RA) is a disease involving chronic and abnormal inflammatory reaction of the immune system against body tissues, leading to joint destruction and physical disability.¹⁻³ Patients with rheumatoid arthritis are at an increased risk of cardiovascular events and cardiac mortality compared to general population.⁴ Several studies have documented a substantial excess mortality in patients with rheumatoid arthritis from AMI and other cardiovascular diseases.⁵ It is possible that systemic inflammation in rheumatoid arthritis may lead to an acceleration of atherogenesis.⁵ This increased risk could be due to the concomitant presence of other risk factors like hyperlipidemia, hypertension, diabetes mellitus (DM), poor physical fitness, or simply from the chronic inflammatory state of the body.^{6,7} DM is a well-established risk factor for CVD, particularly coronary artery disease. It increases the risk of CVD two to three folds compared to the non-diabetic population.^{8,9} The objective of the present study was to assess the prevalence of acute myocardial infarction in patients with rheumatoid arthritis.

MATERIALS AND METHODS

This prospective study was carried out to assess the prevalence of acute myocardial infarction in patients with rheumatoid arthritis in Department of General Medicine, Rama Medical College Hospital & Research Centre, Pilkhuwa, Hapur, Uttar Pradesh, India. 300 patients with a confirmed diagnosis of RA were included in this study. Before the commencement of the study ethical approval was taken from the ethical committee of the institute and informed consent was taken from the patients. Patients were enrolled via non-consecutive convenient probability sampling. Demographic factors including age, past and family history of MI were noted using a self-structured questionnaire. Patients were observed for 12 months or till the development of MI. MI was diagnosed based on symptoms, cardiac enzyme, and ECG. Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) v. 23.0 (IBM Corporation, Armonk, New York, USA). Continuous variables were analyzed via descriptive statistics and were presented as mean and SD.

Categorical data were presented as frequency and percentages. A p-value of less than 0.05 meant that the difference between the groups is significant and the null hypothesis is void.

RESULTS

In the present study, 300 patients with a confirmed diagnosis of RA were included in which 52% were females and 48% were males. The mean age of patients was 46 years. 5% patients had previous history of MI and 6% patients had family history of MI. 12% RA patients had non-fatal MI and 3% RA patients had fatal MI. In 85% RA patients MI was absent.

Table 1: Demographic characteristics

| Variables | N(%) |
|------------------------|------------|
| Mean age (yrs) | 46.11 ± 12 |
| Gender | |
| Male (%) | 144(48%) |
| Female (%) | 156(52%) |
| Previous history of MI | 15(5%) |
| Family history of MI | 18(6%) |

Table 2: Prevalence of acute myocardial infarction in patients with rheumatoid arthritis

| Prevalence of acute myocardial infarction | N(%) |
|---|-----------|
| Non-fatal MI | 36(12%) |
| Fatal MI | 9(3%) |
| Absent | 255(85%) |
| Total | 300(100%) |

DISCUSSION

Several mechanisms including individual differences in pain perception and generalized hyposensitivity to myocardial ischemia play an important role in the pathology of RA, and more recently, the balance between proinflammatory and anti-inflammatory cytokines.¹⁰⁻¹² According to the inflammation-based hypothesis, there is an increased production of anti-inflammatory cytokines with decreasing expression of CD11b/CD18 adhesion molecules on phagocytes among patients with asymptomatic ischemia.¹¹

In the present study, 300 patients with a confirmed diagnosis of RA were included in which 52% were females and 48% were males. The mean age of patients was 46 years. 5% patients had previous history of MI and 6% patients had family history of MI. 12% RA patients had non-fatal MI and 3% RA patients had fatal MI. In 85% RA patients MI was absent.

Patients with RA are 30% to 60% more likely to suffer a CV event compared with the general population^{13,14}, especially myocardial infarction.^{15,16,4}

A meta-analysis of observational studies estimated a 68% increase in the risk of acute MI in patients with RA vs the general population (pooled relative risk 1.68, 95% CI 1.40–2.03), with significantly increased risk in both sexes.³

Kremers et al. indicated that hospitalized MIs were 3.17-fold more prevalent in RA patients than in non-RA subjects prior to RA diagnosis, but hospitalized MI risk did not increase after RA diagnosis.¹⁷ Solomon et al. reported RA prevalence in female cohorts and relied on self-reports to ascertain CVD events, although women with RA had a 2-fold higher risk of MI.⁴

Fischer et al. found a 47% increased risk of AMI for RA patients in a United Kingdom study.¹⁸

McCoy et al. evaluated the outcomes of acute myocardial infarction in patients with rheumatoid arthritis and found numerically lower rates of short-term mortality between rheumatoid arthritis and non-rheumatoid arthritis (6% versus 12%), which did not reach statistical significance, but 5-year all-cause mortality was higher among rheumatoid arthritis compared with nonrheumatoid arthritis.¹⁹

Mantel and colleague previously studied 1135 Swedish RA patients and 3184 matched controls with first-time acute coronary syndrome (ACS) in 2007–2010. They reported that, among RA patients compared with controls, the risk for recurrent ACS was increased by 25% and risk for all-cause mortality by 50% in a model adjusted for age, sex, pre-existing comorbidities, pharmacotherapies and ACS type.²⁰

Francis et al. reported lower in-hospital mortality among patients presenting with acute myocardial infarction-rheumatoid arthritis compared to no rheumatoid arthritis.²¹

CONCLUSION

The present study concluded that 12% RA patients had non-fatal MI and 3% RA patients had fatal MI.

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