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Original Article

Cardiac involvement in rheumatoid arthritis: A cross-sectional study in Iran



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ABSTRACT

Background: Cardiovascular disease is one of the extra-articular manifestations of rheumatoid arthritis (RA) that is the most common cause of death in these patients. So we decided to evaluate RA patients in terms of history, clinical examination, electrocardiography, and echocardiography to determine the prevalence of types of cardiac involvements in these patients.

Methods: 100 consecutive patients, diagnosed with RA, referred to rheumatology clinic in Razi referral hospital of Rasht, Iran, were enrolled.

Complete physical examination of the joints was performed in all subjects to evaluate the remission of disease. Signs and symptoms of possible cardiac involvement were evaluated in patients by taking history and erythrocyte sedimentation rate test; moreover, an expert cardiologist performed complete cardiovascular examination in all participants. Then, all subjects were referred to a same center for electrocardiography and echocardiography. Finally, analysis was performed by using chi-square and t tests.

Results: 23 (23%) males and 77 (77%) females were included in this study. Tachycardia, dyspnea, and chest pain were the most cardiac signs and symptoms of patients. 32 subjects had abnormal findings in electrocardiogram. The most abnormal findings in patient's ECG were ST interval and T wave changes. Abnormal findings in echocardiography were observed in 74 participants. Pericardial involvement and ventricular dysfunction were the most abnormal findings in patient's echocardiography. We found a significant relation between duration of RA disease and abnormal echocardiography findings ($p < 0.05$).

Conclusion: This study indicates the high prevalence of cardiac involvement in RA patients.

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1. Introduction

Rheumatoid arthritis (RA) is a chronic systemic disease with unknown etiology. It is characterized with persistent inflammatory synovitis that usually affects peripheral joints with symmetric distribution. The course of this disease varies from mild and short-term oligoarticular disease to severe and progressive polyarthritis disease with significant dysfunction.^{1,2}

The prevalence of RA disease is about 1% in general population and affects women three times more than men, approximately.²

The onset of RA disease, almost in two-thirds of patients, is associated with fatigue, anorexia, general weakness, and vague musculoskeletal symptoms; this initial phase may take weeks to months. Along with symmetric involvement of joints, especially hand and foot joints, specific symptoms appear gradually.^{3,4}

Extra-articular manifestations of RA can occur during the course of this disease and even before onset of arthritis.⁵

Cardiovascular disease is one of the extra-articular manifestations of RA that is the most common cause of death in these patients.^{6,7}

All layers of the heart may involve in RA patients. Pericarditis is the most common form of cardiac involvement in these patients; moreover, valvular disorders, coronary vasculitis, and ventricular diastolic dysfunction can be seen in RA.^{6,7}

Therefore, we decided to evaluate RA patients in terms of history, clinical examination, electrocardiography, and echocardiography to determine the prevalence of types of cardiac involvements in RA patients.

2. Methods

We conducted a cross-sectional study in a referral rheumatology clinic in Razi hospital of Rasht, Iran.

In this study, 100 consecutive patients, diagnosed with RA, according to the ACR-EULAR Classification Criteria for Rheumatoid Arthritis 2010,⁸ were enrolled.

Pregnant persons and patients with history of smoking, renal failure, diabetes, hypertension, upper respiratory tract infection, thyroid dysfunction, and other systemic diseases were excluded from study.

Demographic and clinical data such as sex, age, job, drug history, and duration of disease were gathered.

Complete physical examination of the joints was performed by an expert rheumatologist in all subjects to evaluate the remission of disease.

Signs and symptoms of possible cardiac involvement were evaluated in patients by taking history and erythrocyte sedimentation rate (ESR) test; moreover, an expert cardiologist performed complete cardiovascular examination in all participants. Then all subjects were referred to a same center for electrocardiography and echocardiography.

The Ethical Committee of Guilan University of Medical Sciences approved this study and informed consent for participation in the study was obtained from all subjects.

2.1. Statistical analysis

Analysis was performed by using chi-square and t tests. All statistical analyses were done by SPSS software 17.0. *p* values less than 0.05 were considered significant.

3. Results

Patients included in this study, 23 (23%) males and 77 (77%) females, were 19–81 years old and the mean age was 49.74 ± 11.56 years.

History findings, clinical, and laboratory characteristics of patients were listed and summarized separately in [Table 1](#).

Of the 100 RA patients, 25 subjects had complete remission.

Tachycardia, dyspnea, and chest pain were the most cardiac signs and symptoms of patients (38, 36, and 34 subjects, respectively).

Thirty-two subjects had abnormal findings in electrocardiogram (ECG). The most abnormal findings in patient's ECG were ST interval and T wave changes (15 subjects, in total). Moreover, sinus tachycardia was observed in 1, low voltage in

Table 1 – History findings, clinical, and laboratory characteristics of patients.

	n = 100
Signs and symptoms of cardiac disease	
Dyspnea	36
Chest pain	34
Tachycardia	38
Orthopnea	3
Syncope	7
Cardiac murmurs	7
S3	0
S4	6
Arrhythmia	6
Positive hepatojugular reflex	5
Increased jugular vein pressure (JVP)	4
Edema	7
Pulmonary rales	6
Drug history	
Calcium	52
Folic acid	46
Methotrexate	71
Prednisolone	83
Chloroquine	68
Vitamin D	2
Diclofenac	4
Nortriptyline	1
Carbamazepine	2
Sandimon	1
Fluoxetine	2
Famotidine	2
Fersolin	1
Alendronate	7
Inderal	12
Imuran	1
Cobix	1
Chemonazepam	1
Amitriptyline	3
Omeprazole	1
Ranitidine	1

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