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Estimating the prevalence and disease characteristics of rheumatoid arthritis in Tehran: a WHO -ILAR COPCORD study (from Iran COPCORD study, urban study stage 1)

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Abstract

Background: To estimate the prevalence and characteristics of Rheumatoid Arthritis (RA) in an urban area of Tehran.

Methods: A total of 50 clusters were randomly selected in Tehran and 10291 subjects completed the COPCORD Core Questionnaire during 2004 and 2005. Patients with rheumatic complaints were examined and diagnosed by subspecialty fellows in rheumatology. Laboratory and radiology tests were also performed if required.

Results: A total of 35 subjects (5 men and 30 women) were diagnosed with RA, with a prevalence of 0.33% (95% CI: 0.22-0.46). Our results demonstrated that RA was six times more common in women than men. The mean age (± SD) of patients was 52.3 (± 17.6) years. Morning stiffness > 1 hour was reported in 37.1% of patients. Rheumatic signs were commonly found in wrist (60%), knee (60%), metacarpophalangeal (48.6%) and proximal interphalangeals of hand (40%). Approximately 46% of patients had difficulty carrying out daily activities.

Conclusion: According to our study, the prevalence of RA in Iran seems to be lower than western countries. However, the prevalence of RA in Iran seems to be approximately in the middle point comparing the APLAR region (from 0.7% in Australia (rural) to 0.12% in Thailand).

Keywords: Rheumatoid Arthritis, Prevalence, Iran.

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Introduction

Rheumatoid Arthritis (RA) is a chronic crippling disease with an unknown etiology. Both patients and the society are affected by disease in terms of functional disability, higher risk of co-morbidities such as osteoporosis and cardiovascular events, low quality of life, work limitation and high financial burden of disease (1,2). It has been estimated that RA healthcare costs are about 4,000 € per patient per year (3).

Providing precise estimating of prevalence of different rheumatic diseases in communities is essential for health policy makers to effectively manage these conditions. In 1981, the World Health Organization (WHO) and International league against rheumatism (ILAR) created WHO/ILAR Community Oriented Program for and Control of Rheumatic Disease

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(COPCORD) (4). Prevalence of RA varies in different populations from 0.18% to 1.07% worldwide (5). According to recent studies, the prevalence of RA is lower in Asia- Pacific region than United States and Europe (5,6). Since there is little known about RA in Iran, Tehran COPCORD study data was analyzed to estimate the prevalence of RA and its clinical manifestations in Iran.

Methods

This cross-sectional study was conducted from February 2004 to September 2005 in Tehran, Iran. Multistage sampling was used to select samples from Tehran's citizens. A total of fifty clusters were randomly selected using the Iranian Post Office zip code data bank. The study population comprised 13741 individuals (with an age of 15 years and older). Our data collection team went to the same cluster in three consecutive Fridays (the second and third visits were done for those who were absent on previous Fridays). In general, 2868 persons were absent in all 3 visits, 582 refused to participate, and 10291 subjects (4878 men and 5413 women) were interviewed. The COPCORD Core Questionnaire was used to screen subjects for musculoskeletal complaints. Among interviewed subjects, 4691 had rheumatologic complaints and underwent comprehensive physical examination by subspecialty Fellows of Rheumatology. Deformity, pain on movement, tenderness, soft tissue swelling, limited range of motion and bony swelling were considered as joint involvement. Para-clinic investigations were also performed to confirm diagnosis if required. Rheumatoid Arthritis was diagnosed according to 1987 revised criteria of American College of Rheumatology (ACR) (7). The study proposal was approved by the National Ethics Committee on Medical Research of the Ministry of Health and Medical Education.

Prevalence of Rheumatoid Arthritis (RA) was estimated using survey analysis in Stata program version 8 (Stata College Station, TX, USA). Primary sampling unit of 50 clusters and post stratification by sex and age were used according to weight of national population census in Tehran. Davatchi and his colleagues have comprehensively explained the details of sampling and analysis (8).

Results

There were 35 subjects (5 men and 30 women) with diagnosis of RA. Ten out of thirty five patients (28.5%) were diagnosed as incident cases. The mean age of patients was 52.3 ± 17.6 (mean ± SD) and the mean age of disease onset was 46.9 years old (range: 16 -80). Disease duration of patients varied between 1 month to 70 years with the mean of 9.7 years (SD: 15.1) and the median of 5 years. Baseline characteristics of the study population and rheumatoid arthritis patients are shown in Table 1.

Table 1. Baseline characteristics of the study population and RA patients

Characteristics	Total population N=10291	RA patients N= 35
Female (%)	52.6	85.7
Age (mean ± SD)	37.1 ± 16.3	52.3 ± 17.6
Ethnicity		
Caucasian (%)	72.3	65.7
Turk (%)	27.7	34.3
Marriage		
Married (%)	63.3	74.3
Single (%)	36.7	25.7
Education		
Illiterate (%)	7.2	32.4
Primary school (%)	14.9	38.2
Secondary school (%)	14.6	8.8
High school (%)	9.9	2.9
Diploma (%)	33.2	14.7
University (%)	20.2	2.9

Table 2. Prevalence of RA in different age groups

	Male		Female		Both sexes	
Age group	Prevalence *(%)*	95% CI	Prevalence *(%)*	95% CI	Prevalence *(%)*	95% CI
15 – 29	0.05	0.00-0.30	0	-	0.02	0.003-0.15
30- 39	0	-	0.86	0.31-1.59	0.43	0.16-0.80
40 – 49	0.25	0.05-0.89	0.68	0.21-1.39	0.46	0.15-0.91
50 – 59	0	-	0.86	0.20-1.87	0.40	0.09-0.86
60 – 69	0	-	1.66	0.35-3.47	0.74	0.15-1.64
70 +	0.86	0.18-3.26	2.33	0.73-4.78	1.61	0.60-2.86
All ages	0.09	0.02-0.17	0.58	0.-39-0.80	0.33	0.22-0.46

The age and sex-adjusted prevalence of RA was 0.33% (95% CI: 0.22-0.46). The prevalence of RA increased with age and was 6 times more common among females than males (Table 2).

Among 35 RA patients, 19 subjects were requested to perform Rheumatoid Factor (RF) test. The result of the test was positive in 6 patients (31.6%). In order to manage the uncertainty of this finding, sensitivity analysis was performed. The RF test result for the 16 patients without RF test result, were assumed once positive and once negative. Positive and negative RF was found in 62.8% and 17.1% of cases, respectively.

All of the RA patients had articular complaints seven days before the examination date. History of morning stiffness elicited in 77.1% of patients. Morning stiffness among 37.1% of patients lasted more than 60 minutes. According to the physical examination of patients, wrist and knee were reported as the most common involved joints (deformity, pain on movement, tenderness, soft tissue swelling, limited range of motion, bony swelling) (Fig.1). Ten (28.6%) of the RA patients had osteoarthritis in at least one joint. Prevalence of symptomatic knee and hand osteoarthritis were 28.6% and 14.3%, respectively.

Among the RA patients, 45.7% had difficulty in doing daily activities due to their disease including: Climbing up or down stairs (42.9%), lifting (40.0%), walking (37.1%), squatting (37.1%), carrying (31.4%), dressing (17.1%), bathing/ showering (8.6%) and combing hair (8.6%). However none of the patients had problem in eating.

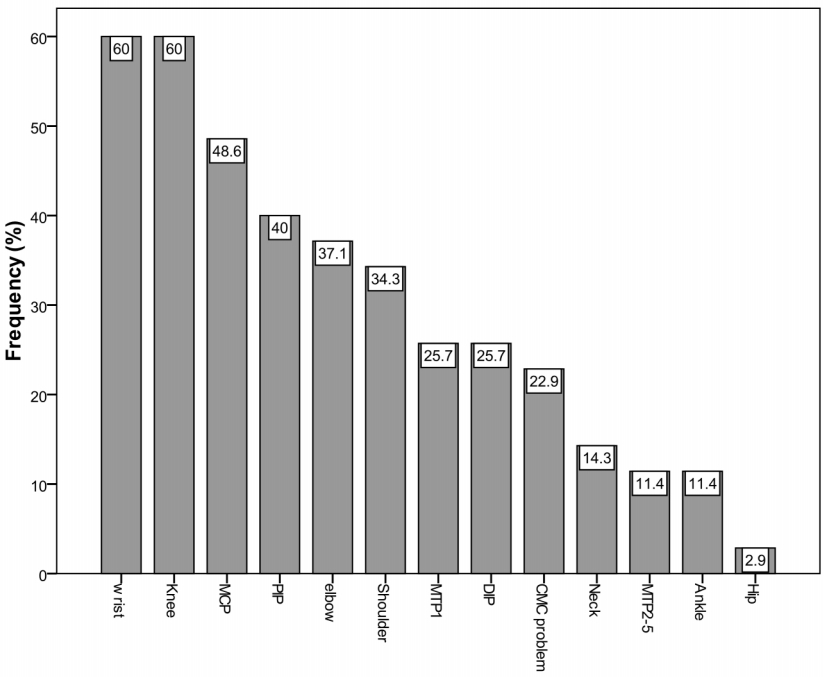

Fig. 1. The frequency of involved joints in RA patients

Discussion

According to our results, the prevalence of RA (0.33%, CI: 0.22%-0.46%) in Tehran is approximately within the range limit of the APLAR region (from 0.7% in Australia (rural) to 0.12% in Thailand) (9). Our results showed lower prevalence than the reported prevalence from Northern European and North American areas (0.5%-1.1%) (6), while the prevalence of RA in Indonesia, China, Bangladesh, and India was similar to that reported in our study (9-13).

The mean age of RA patients in our study was similar to the mean age of the patients in the studies of some developed countries such as Turkey, and Greece (1,14,15).

Age of disease onset in our patients was similar to patients of Greek and Shanghai patients (15,16). The present findings seem to be consistent with another study which found RA to be more prevalent in older age groups (17). In our study the prevalence of RA was about 80 times higher in > 70 year old population compared to the 15-29 year old age group. We have found that RA is about 6 times more common in females than males. However the female to male ratio has been reported from 11:1 in Turkey to 1.38:1 in china (14,18).

Morning stiffness in our patients (77.1%) was similar to what was reported in a study on RA patients in USA (79%); however morning stiffness lasting more than 1 hour in our patients (37.1%) was less than patients reported in USA (49%) (19). Morning stiffness of more than15 minutes in RA patient was reported in 61% of RA patients in a study done in developed countries (20).

According to our results, the most commonly affected joints were included the wrist, knee, MCP and PIP. These findings are similar with those of Fleming A. et al and Teh C. L. et al. However, frequencies of the abovementioned joints involvement in our study were higher than what was reported in Teh C.L. et al. This difference might be due to hospital based sampling of patients in their study (21).

As Rossa and her colleagues have shown, different co-morbidities might be seen in RA patients. The reported prevalence of osteoarthritis in their RA patients was similar to our results (32%) (22). Therefore the reported disabilities in the RA patients may not be totally attributed to their RA disease; while some of the patients were simultaneously suffering from other co-morbidities such as osteoarthritis.

Since near to half of our patients were not requested to do RF test and the result of sensitivity analysis had a wide range, thus we cannot conclude on it.

In different countries, different clinical manifestations of RA might be due to environmental and genetic factors (6). However our study was cross sectional and therefore neither role of these factors nor the natural history of disease could be assessed.

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