

Research Article**Prevalence of RA and SLE in Saudi Arabia****Dr. Jamal Albishri¹, Muhammad Bukhari², AwadAlsabban³, Fahad A. Almalki⁴, Abdulrahman S Altwairqi⁵**¹Associate professor, ^{2,3}Assistant Professor, ^{4,5}Senior Medical Student

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Abstract: Rheumatic diseases have become a great burden of modern society causing disability, pain, and social, emotional, and economic problems. It has been noticed that the prevalence of rheumatic diseases varies in different geographical regions. This indicates that epidemiological methods could be crucial tools for further evaluation of possible causes and risk factors for rheumatic diseases. In this study, we estimated the prevalence of systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA) in Taif city, Saudi Arabia, based on data acquired from survey and clinical assessment. This study was conducted in January 2015, in Taif University, Taif, Saudi Arabia. The study had two phases. The first phase was a cross-sectional survey, designed to gather the data about prevalence of RA and SLE in first degree alive relatives of the participants. Of total 802 students, 722 completed the survey. The second phase was clinical assessment of patients with possible SLE and/or RA identified in the first phase. Prevalence of SLE was estimated in persons above one year old, while prevalence of RA was estimated in persons older than 18 years. The survey resulted in 16 potential patients affected by SLE and/or RA. Clinical assessment revealed positive diagnosis of RA in 12 patients (0.3%), and SLE in 2 patients (0.038%). RA predominantly affected females, with female-to-male ratio 11:1. Rheumatoid factor was positive in 75% of patients with RA. Remaining 2 patients were diagnosed with JRA and therefore excluded from further analysis. In conclusion the Prevalence of RA in Taif city, Saudi Arabia, was similar to estimated prevalence on a global scale, while the prevalence of SLE was slightly lower than in developed countries. Further epidemiological research is needed to evaluate current data.

Keywords: rheumatoid arthritis, systemic lupus erythematosus, prevalence, Saudi Arabia.

INTRODUCTION

Currently, more than 100 conditions are labelled as rheumatic diseases, giving that criteria for classification include absence of clear etiology and combination of common clinical, imaging, and laboratory findings without strict boundaries [1]. Common rheumatic diseases, such as rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), juvenile rheumatoid arthritis (JRA), systemic sclerosis (SS), ankylosing spondylitis (AS), and Sjögren's syndrome, have become a great burden of modern society. During the past decade, it was noticed that prevalence and clinical features of rheumatic diseases varied greatly depending on the region, lifestyle, and social status, suggesting that genetic and environmental factors play an important role in occurrence and progression of rheumatic diseases [2]. This indicates that epidemiological methods could be crucial tools for further evaluation of possible causes and risk factors for rheumatic diseases.

Latest report of global burden of RA was a result of the Global Burden of Disease 2010 study, [3] and the American College of Rheumatology 1987

criteria were used to identify patients with RA. They estimated the global prevalence of RA to 0.24%, without noticeable change during the period from 1990 to 2010. Disability-adjusted life years (DALYs) for RA increased globally from 3.3 million in 1990 to 4.8 million in 2010, but this increase was attributed to population growth and longer life length. According to this report, RA takes 42nd place on the list of diseases producing highest disability.

According to study conducted in Qassim region of Saudi Arabia, the prevalence of RA was 0.22%. The investigated population included 5891 persons (males and females) older than 16 years. It has also been noticed that older age and female gender were associated with higher prevalence of RA. Clinical presentation of RA in Saudi Arabia estimated by symptoms, joint involvement, and presence of rheumatoid nodules, kerato conjunctivitis sicca, and other features, seemed to be similar to the pattern of RA present in developed countries [4].

There are no current data specifying global prevalence of SLE, mainly due to differences in study

design and epidemiological methods used in different studies [5] There are however plenty of prevalence data by countries and regions. In the United States, epidemiological data are the most comprehensively acquired, and they show increasing prevalence of SLE with time [5]. During the period from 1950 to 1979, the prevalence was 40.0 [6], while the data from 1991 to 2001 show the prevalence of 78.5 [7] Recent as well as older studies suggest that SLE is significantly more prevalent in females and elderly [8, 9].

There are controversial evidences on whether the prevalence of SLE in Saudi Arabia resembles that in developed countries, probably because of the lack of relevant data. While some studies suggest that SLE is not highly prevalent in Saudi Arabia [10], others claim that the prevalence is much higher [11]. In a study conducted in Al-Qaseem region of Saudi Arabia, the prevalence of SLE was 19.28 per 100,000 inhabitants [12]. The study included 10372 individuals older than 16, which is marked as similar to western countries. This study focused on investigating the prevalence of SLE and RA in Taif city, Saudi Arabia, based on data acquired from survey and clinical assessment.

MATERIAL AND METHODS

This study was conducted in January 2015, in Taif University, Taif, Saudi Arabia. The study encompassed two phases. The first phase consisted of a cross-sectional survey, specially designed to gather the data about prevalence of RA and SLE in first degree alive relatives of the participants. Individuals were eligible to participate in the survey if they met all the following criteria: 1) medical or pharmacy students in the third year or above, 2) residents of Taif city, Saudi Arabia, 3) individuals who signed the informed consent. The reason for including medical and pharmacy students on third year or above was to increase the

accuracy of study results using their existing medical knowledge of investigated conditions.

The survey was distributed to the selected students after full step-by-step explanation on how to appropriately complete the survey. Of total 802 students, 722 completed the survey. Eighty students were excluded because of refusing the survey (n=68), or incomplete surveys (n=12).

Second phase consisted of a full clinical assessment of patients with possible SLE and/or RA identified in the first phase. The assessment was made by rheumatologist taking into account patients' medical history, clinical examination, and additional examinations with the aim to confirm or disprove the diagnosis.

All the students' first relatives participating in the survey and further clinical assessment signed the informed consent. Prevalence of SLE was estimated in family members above one year old, while prevalence of RA was estimated in family members older than 18 years.

RESULTS

The survey among the students resulted in total of 5307 first degree alive relatives aged between 1 and 80 years (Table 1), of which 3985 relatives were older than 18 years (Table 2). All the relatives were of Saudi Arabian nationality. According to data from the survey, of total number of relatives, 16 were marked as potential patients affected by SLE and/or RA. During the second phase, clinical assessment of the 16 potential patients revealed positive diagnosis of RA in 12 patients (0.3%) (Tables 2, 3), and SLE in 2 patients (0.038%) (Table 1). Remaining 2 patients were diagnosed with JRA and therefore excluded from further analysis.

Table -1: Characteristics of total family members and prevalence of SLE.

Variables	Values
Total Family members No	5307
Age range (mean \pm SD) years	1-80 (28.1 \pm 15.50)
Male No (%)	2845 (53.6)
Female No (%)	2462 (46.4)
Nationality – Saudi No (%)	5307 (100)
SLE No (%)	2 (0.038)

Table- 2: Characteristics of family members older than 18 years and prevalence of RA among them.

Variables	Values
Total Family members >18 years No	3985 (75)
Age range (mean \pm SD) years	18-80 (35.3 \pm 18.32)
Male No (%)	2169 (54.3)
Female No (%)	1816 (45.4)
RA No (%)	12 (0.3)
Duration of disease (mean \pm SD) years	(12 \pm 6.2)

Table- 3: Clinical characteristics of 12 patients with RA.

Variables	Values
RA No (%)	12 (0.3)
Age (average \pm SD) years	49 \pm 8.5
Female : male ratio	11 : 1
Rheumatoid factor No (%)	9 (75)

Patients diagnosed with RA had mean duration of the disease of 12 ± 6.2 years (Table 2). RA predominantly affected females, with female-to-male ratio 11: 1 (Table 3). Rheumatoid factor (RF) was positive in 9 of 12 patients with RA (75%) (Table 3). One of the patients with SLE was 29 years old with duration of the disease of 10 years, while the other one was 52 years old with disease duration of more than 20 years. Average age of patients with RA was 49 ± 8.5 years (Table 3).

DISCUSSION

Historical data suggest that rheumatic diseases have been present among humans for thousands of years, but had variable geographical occurrence [13]. Despite long history and extensive research, the origin of rheumatic diseases has not been fully explained. Even the definition of the disease, along with diagnostic criteria remained questionable, due to variable clinical expression and inconclusive value of laboratory findings [13]. Being chronic and progressive diseases that lead to disability, pain, and social, emotional, and economic problems, RA and SLE deserve more attention [14]. Epidemiological studies of RA, SLE, and other rheumatic diseases are expected to give valuable information about etiology, clinical diversity, and expansion patterns of these conditions. This is due to differences in parameters of rheumatic diseases among groups with different characteristics, such as age, gender, social status, and geographical location [15].

In present study, after conducted survey and clinical assessment of potential patients, the prevalence of RA was 0.3% (Tables 2, 3). A study on prevalence of RA in Al Qassim region conducted in 1998, had similar results with prevalence of RA being 0.22% [16]. According to literature search, this was so far the only study dealing with prevalence of RA in Saudi Arabia, although there are many studies dealing with clinical features, diagnosis, and treatment of RA in Saudi Arabia [17]. The latest research on global burden of RA, provided by Global Burden of Disease 2010 study, revealed that 0.24% of world population is affected by RA [3]. Our study shows that prevalence of RA in Saudi Arabia resembles incidence of the disease on a global scale.

The above mentioned study from Al Qassi region estimated RA to be more prevalent in women [16], which is also confirmed in our study, with female-to-male ratio 11: 1 (Table 3). However, although RA is generally more prevalent in females than in males, most

studies from other countries report female-to-male ratio of 4-5: 1 [18, 19]. Further epidemiological studies are needed to determine whether such high difference between female-to-male ratios in Saudi Arabia and other countries actually exists.

According to epidemiological evidence, seropositive RA defined by positive RF is 2 – 4 times more prevalent than seronegative RA [20]. In our study, RF was positive in 75% of patients with RA, which fits into the expected range (Table 3). During the literature search, we did not find information about RF factor occurrence specifically for Saudi Arabia. Prevalence of SLE in our study was 0.038% (Table 1). The data about global prevalence of SLE are lacking due to variable design of studies from different countries [5]. Study conducted in 2005, estimated the prevalence of SLE in the United States of 0.0828% [7], while the prevalence in Saudi Arabia was found to be 0.01928% [12]. Therefore, our research resulted in lower prevalence of SLE in Saudi Arabia than in the United States. Slightly higher prevalence of SLE than existing evidence from Saudi Arabia can be either accidental or a sign of increasing occurrence of the disease. In the United Kingdom, prevalence of SLE was in range from 0.025% to 0.040% [21]. Further research is needed in order to determine factors causing possible differences in prevalence of SLE in Saudi Arabia and other countries.

CONCLUSION

In conclusion, our study found that prevalence of RA in Taif city, Saudi Arabia, was similar to estimated prevalence on a global scale, while the prevalence of SLE was slightly lower than in developed countries. Slightly higher prevalence of RA in our study than in previous research conducted in Saudi Arabia could possibly mean an increasing occurrence of the disease. Due to variable clinical expression of rheumatic diseases, their unrevealed origin, and nonconforming diagnostic criteria, we think that further epidemiological research can contribute significantly to evaluation of current hypotheses and finding new causative and risk factors of these conditions.

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