

ORIGINAL ARTICLE

Prevalence of rheumatic disorders in Iranian chemical injured patients: a WHO–ILAR COPCORD study

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Abstract: Background: Rheumatic disorders are one of the most prevalent human diseases which commonly become chronic and cause different types of disabilities. Chemical veterans may suffer from chronic difficulties caused by rheumatic disorders that can lead to decrease of their quality of life. The main purpose of this study was to evaluate the prevalence of rheumatic disorders among Iranian chemical warfare patient's long-years after sulfur mustard (SM) exposure.

Methods: This cross-sectional study was conducted from 2013 to 2014 on 245 Iranian chemical veterans. In order to evaluate rheumatic disorders, a special questionnaire for COPCORD studies were filled by veterans and then general and special rheumatology examinations were applied under the supervision of internists and rheumatologists. Data from all questionnaires were analyzed by SPSS software and the results were reported as percentage or mean $\pm$ SD.

Results: Osteoarthritis (69.9%) was the most common complications diagnosed in these patients. After that back pain (30.5%) and pre-arthritis (27.2) were the other popular complications among veterans. The percentage of frozen shoulder and moderate carpal tunnel syndrome was 13.2% and 11.5%, respectively. Tennis elbow and fibromyalgia (3.7%), rheumatoid arthritis (0.8%) and gouty arthritis with 0.4% were the lowest complications among these patients.

Conclusion: Rheumatic associated complications in Iranian chemical injured veterans are higher than the mean of whole community. This data provided the possibility of calculating the disease's burden and making efficient decisions in the sanitary and treatment systems.

Keywords: chemical veterans, rheumatic disease, prevalence, COPCORD

INTRODUCTION

Rheumatic disorders are among the most prevalent human diseases. One of seven referring patients to physicians suffer from rheumatic diseases [1]. Several factors such as bacterial infections, life style, and environmental factors can be correlated to rheumatic disorders [2, 3]. This disease can cause different types of important disabilities which in turn adversely influence the quality of life, physical and social

activities in affected individuals [4]. It was estimated that ~40% of all chronic diseases and ~54% of long term disabilities are caused by rheumatic diseases [5]. For instance, Disability Adjusted Life Year (DALY) in cases of osteoarthritis was increased from 13275 patients in 1990 to 14230 patients in 2000 [6]. These patients are significantly susceptible to other disorders [7] and diseases like hepatitis B [8].

Back into the 7th decade, the manuscript of the community oriented program for the control of rheumatic diseases (COPCORD) was provided in the non-communicable disease section of WHO [9]. This manuscript describing a model of consumable agenda in rural and urban areas of developed and developing countries, was evaluated in the first meeting of the ILAR and WHO in January 1981 in Genève and formed as COPCORD [10].

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COPCORD is one of the most comprehensive epidemiologic studies worldwide. The first stage of the agenda was approached in Iran which was applied by the Rheumatology Research Center of Tehran University of Medical Sciences on the adult population of Tehran's urban areas via cluster sampling method. It was also followed by other studies from other areas of the country in the recent years [11].

A joint study by the Iranian and Bangladeshi researchers with the objective of providing and improving a questionnaire consisting of identification of knee osteoarthritis risk factors in developing countries, reported a pilot survey in the phase III of the COPCORD questionnaire. They suggested that these questionnaires must be validated for identifying knee osteoarthritis among Asian and Oceania populations [12].

Mustard gas (Sulfur mustard) is one of the warfare agents which has been utilized during chemical wars and used by Iraq against Iran during 1980-1988. During Iraq-Iran war, SM injured more 100,000 veterans that many of whom are still suffering from its late effects. Chronic infection, purulent bronchitis, spread tightened trends, bronchial hyper activity, severe asthma, bronchitis obliteran, psychophysiological asthma and vascular-pulmonary problems are the most prevalent implications caused by sulfur mustard exposure in veterans [15, 16]. Chemical veterans may suffer from some chronic difficulties such as rheumatic disorders which can lead to decrease of their quality of life, their working abilities, social relationships and physical activities. However, there is little information about the prevalence of rheumatic disorders among chemical veterans.

Since nutrition, medicine, economic, activity status and lifestyle of the chemical veterans are different from other communities, the frequency of rheumatic diseases among this population may be different.

Therefore, the aim of this study is to evaluate the prevalence of rheumatic diseases among chemical veterans exposed to SM during the imposed war of Iraq against Iran using a community oriented program for the control of rheumatic diseases.

METHODS

This cross-sectional survey was conducted on the 245 Iranian chemical veterans from Tehran and Karaj cities in 2013 to 2015. The veterans who fulfilled the following criteria were included: (1) having a documented history of sulfur mustard exposure (confirmed by related authorities), (2) male gender, (3) being over 40 years old, (3) moderate and negligible involvement of lungs and (4) giving a consent letter for participating in the study.

Sampling in Tehran city was accomplished by introducing the initial list of certain chemical veterans from the hospitalization sections of Baqiyatallah Hospital, lung clinic and the medical commission of the Baqiyatallah University of Medical Sciences. Due to the restrictions of veterans visiting, only the information of 97 chemical veterans from Tehran was obtained successfully.

For sampling in Karaj city, a list of 1050 chemical veterans was prepared by the coordination of the Alborz province Veterans and the Martyrs Affair Foundation (VMAF) primarily. From the initial list, 148 subjects who fulfilled the inclusion criteria were invited to participate in the study. In order to evaluate rheumatic diseases, special questionnaire for COPCORD studies were filled by veterans and general and special rheumatology examinations were applied under the supervision of internists and rheumatologists.

All data from 245 filled questionnaires were analyzed by SPSS software and the results were reported as percentage or mean $\pm$ SD. The COPCORD questionnaire used in this study was provided by the Rheumatology Research Center at Baqiyatallah University of Medical Sciences.

RESULTS

Among the 245 studied veterans, 97 subjects were resident in Tehran and 148 patients lived in Alborz Provinces. The mean of age and BMI of all patients was 51.1 years and 26.7 kg/m², respectively. Other demographic data such as smoking habitat, race and marriage status are presented in Table 1.

After examinations by specialists and assessing medical histories, diseases which were responsible for the mentioned implications were diagnosed. Figure 1 shows the percentage of complaints associated with rheumatoid arthritis in SM-exposed veterans. Osteoarthritis (69.9%) was the most common complications diagnosed in these patients.

After that back pain (30.5%) and pre-arthritis (27.2) were the other popular complications among veterans. The percentage of frozen shoulder and moderate carpal tunnel syndrome was 13.2% and 11.5%, respectively. Tennis elbow and fibromyalgia (3.7%), rheumatoid arthritis (0.8%) and gouty arthritis with 0.4% were the lowest complications among these patients.

The frequency of rheumatic disease associated complications for each age group and the whole studied population can be seen in Tables 2, 3 and 4.

Table 1: The frequency distribution of marriage status, race, occupation status and smoking background in veterans

Variables				Frequency	Percentage
Marriage status	Single		0.4	1	
	Married		98.8	237	
	Spouse dead		0.4	1	
	Separated or divorced		0.4	1	
Race	Fars		62.1	149	
	Azeri		27.9	67	
	Kurd		4.6	11	
	Lor		2.9	7	
	Other		2.5	6	
Occupational status	Employee		34.1	76	
	Worker		2.7	6	
	Retired		34.1	76	
	Self-employed		22	49	
	Unemployed		6.7	15	
	Disabled		0.4	1	
Smoking		Average of time (years)	Daily average use		
	Never	--	--	75.4	178
	I smocked	19.9	10.9	9.7	23
	I used to	6.8	12.7	14.8	35

Table 2: The relative frequency of pre-arthritis (at least one type) based on different age groups

Age Group (Years)	COPCORD Males Tehran	Veterans	
	%	%	Frequency
40-49	4.19	23.7	28
50-59	7.21	31.7	33
Over 60	10.78	23.8	5
Total	---	27.2	66

Table 4: The relative frequency of rheumatoid arthritis based on different age groups

Age Group (Years)	COPCORD Males Tehran	Veterans	
	%	%	Frequency
40-49	0.25	0.8	1
50-59	0	0	0
Over 60	0	4.8	1
Total	---	0.8	2

Table 3: The relative frequency of moderate carpal tunnel syndrome based on different age groups

Age Group (Years)	COPCORD Males Tehran	Veterans	
	%	%	Frequency
40-49	0.69	11.7	14
50-59	0.69	12.5	13
Over 60	0.28	4.8	1
Total	---	11.5	28

The percentage of pre-arthritis in veterans with 51-59 years-old was higher than that in other age groups (Table 2). Veterans over 60 year-olds showed higher percentage of rheumatoid arthritis (4.8%) and moderate carpal tunnel syndrome (4.8%) compared to the other age groups (Table 3 and Table 4).

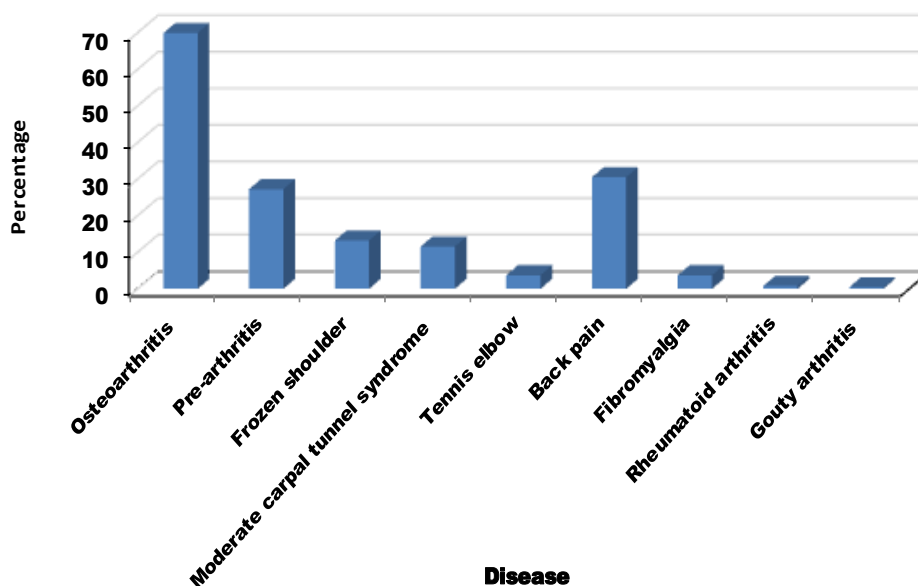
DISCUSSION

With the objective of identification, prevention and controlling rheumatoid diseases in the developing countries, WHO and ILAR coordinated in 1981 in order to organize COPCORD [9]. This program has been performed in many

countries such as Australia, Bangladesh, Brazil, Chili, China, Cuba, Indonesia, India, Kuwait, Malaysia, Mexico, Pakistan,

Egypt, Guatemala, Lebanon, Tunisia, Philippines, Tailed, Vietnam, as well as Iran [9, 12, 17-30].

Figure 1: The frequency of diagnosed joint diseases in chemical veterans



Degenerative joint diseases are among the most prevalent rheumatoid disorders in human populations worldwide [31]. Studies indicating the relationship between age and knee osteoarthritis have demonstrated that along with aging, some levels of degenerative changing occur in joints such as knee joints [32]. In spite of several studies which emphasized rheumatoid disorders in Iran, our study is the first survey in which the percentage of rheumatoid disorders was evaluated in Iranian chemical veterans. Our data have revealed that osteoarthritis and pre-arthritis with the prevalence of 69.9% and 27.2% were the most prevalent among the studied population, respectively. The results of a study conducted in Tehran confirmed these results [11]. The results of a study on rural areas of Iran revealed that about 20% of patients suffered from osteoarthritis in at least one joint. Also, the COPCORD results of 17 countries indicated that with the prevalence of 16.9%, Iran stands in the second level of osteoarthritis prevalence [33].

Our results showed that the prevalence of pre-arthritis or soft tissue rheumatoid among veterans was remarkably higher than the general population of Iran. Similarly, previous studies in Iran showed that the prevalence of pre-arthritis in Sanandaj, Tehran and for the whole country was 5.5%, 4.62% and 4.6%, respectively [11, 24, 34].

The prevalence of rheumatoid arthritis in our study was 0.8%, which was close to the results reported previously in the southeast areas of Iran (0.98%) [35]. Meanwhile, the prevalence of rheumatoid arthritis among veterans was

higher than the population of Tehran (0.33%) and Sanandaj (0.51%) [11, 24]. The comparison of the following results with the general population of other countries revealed a higher prevalence of the mentioned diseases among veterans.

The prevalence of gouty arthritis in this study was 0.4%, while it was previously reported as 0.13% in Tehran and 0.12% for Sanandaj [24, 36]. Dawatchi et al. indicated that Iran is ranked 11th among 17 countries in regards to the prevalence of this disease [34]. The other statistics revealed that Indonesia (1.6%) and Australia (1.5%) had the highest frequency for this disease [34].

CONCLUSIONS

This study evaluated the prevalence of rheumatic complications and disorders among Iranian chemical veterans community. Our results have demonstrated that total rheumatic complaints and disorders among this population are higher than the mean of the whole community. These data provided the possibility of calculating the disease's burden and making efficient decisions in the sanitary and treatment systems. Due to the restrictions and special treatment needs of this community, approaching periodic screening tests, designing beneficial nutrition, athletic and treatment interventions can improve and meliorate rheumatic diseases among chemical veterans. Therefore, this study has performed the initiating steps in the case of identifying mentioned complications among

chemical veterans and following steps must be taken to investigate the preventing applications of rheumatoid disorders among this population. Also, medicine prescription as well as the intervention of the prescribed drugs must be evaluated through a widespread study.

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