Epidemiology of rheumatoid arthritis in Elbasan district, Albania

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Abstract

Aim: The purpose of this study was to assess the magnitude and distribution of rheumatoid arthritis in Elbasan district, which is part of one of the main regions in Central Albania.
Methods: A cross-sectional study was conducted in Elbasan district including all cases with rheumatoid arthritis seeking care at primary health care services during the period January 2012 to December 2014 (219 cases: 81 men and 138 women). Diagnosis of rheumatoid arthritis was based on clinical signs and symptoms and laboratory examination. Fisher's exact test was used to compare sex-differences in the distribution of genetic factors and behavioral characteristics.
Results: Overall, the prevalence of rheumatoid arthritis for the three-year study period was 78/100,000 population. Conversely, the mean annual incidence of rheumatoid arthritis in Elbasan district was 3.7/100,000 population. Genetic factors were more prevalent among female cases, whereas smoking, alcohol intake and excessive meat consumption were more prevalent in male cases. On the other hand, there were no sex-differences in the prevalence of chronic conditions including hypertension, heart diseases and diabetes.
Conclusion: This study provides important evidence about the magnitude and distribution of rheumatoid arthritis in Elbasan district, which constitutes an under-researched area of transitional Albania. Health professionals and policymakers in Albania should be aware of the negative health impact of rheumatoid arthritis in the adult population.

Keywords: behavioral factors, Elbasan district, genetic factors, lifestyle factors, rheumatoid arthritis.

Introduction

In population-based studies conducted in industrialized countries, it has been reported that rheumatoid arthritis affects 0.5%-1.0% of adults (1). However, the information from developing and transitional countries including Albania is scant.

In general, rheumatoid arthritis is deemed as a clinical syndrome which includes several disease divisions (2), with a number of inflammatory flows (3), leading to an eventual common pathway in which persistent synovial inflammation and associated damage to articular cartilage and underlying bone are present (1).

The etiology of the rheumatoid arthritis involves genetic factors which account for 50% of the risk of incurring this condition (4,5) and are usually linked with either autoantibody-positive disease (ACPA-positive) or ACPA-negative disease (1). It should be noted that ACPA-positive disease is related to an increased joint damage and low remission rates (6). On the other hand, smoking, which is one of the environmental factors most commonly studied for rheumatoid arthritis, is considered a risk factor for ACPA-positive disease (7).

Based on previous studies conducted in developed countries, there is well-established evidence about the pathophysiology of rheumatoid arthritis (1,8,9). Hence, based on the current evidence, a main inflammatory process in the pathophysiology of the rheumatoid arthritis is related to overproduction of the tumor necrosis factor (1,8) which in turn leads to overproduction of many cytokines such as interleukin 6, which causes persistent inflammation and joint destruction (1,9).

A recent study was conducted in Tirana, the capital of Albania, aiming at assessing the distribution of risk factors among people diagnosed with rheumatoid arthritis in the adult population (10). According to this report, overall, there were diagnosed 817 cases with rheumatoid arthritis in all primary health care centers of Tirana for the period 2009-2012 [529 (65%) women and 288 (35%) men]. This study found that genetic factors were responsible for 60% of the female cases and 45% of the male cases, with a statistically significant sex-difference (10). As expected, the disease was more frequent among older individuals in both sexes. Furthermore, the majority of the cases with rheumatoid arthritis were from urban areas of Tirana (10).

Elbasan district constitutes the largest area of Elbasan prefecture, which is one of the main regions in Central Albania (11). According to the most recent estimates, the district of Elbasan has a population of 279,991 inhabitants. Especially the city of Elbasan is considered as a highly polluted area due to its iron-steel industry which is linked to high levels of air pollution (11,12). To date, the information about the magnitude and correlates of rheumatoid arthritis in the population of Elbasan district is rather scarce. Therefore, in this context, the aim of the current study was to assess the magnitude and distribution of rheumatoid arthritis in Elbasan district.

Methods

A cross-sectional study was conducted in Elbasan district including all cases with rheumatoid arthritis seeking care at primary health care services during the period January 2012 to December 2014. During this three-year period, overall, there were registered 219 cases with rheumatoid arthritis in primary health care services of Elbasan district (81 men and 138 women).

Diagnosis of rheumatoid arthritis was based on clinical signs and symptoms (joints' pain, joints affected, articular involvement and morning stiffness), as well as the laboratory examination (rheumatoid factor and other antibodies). Besides the clinical diagnosis of rheumatoid arthritis, each case was also examined with regard to the stage of arthritis, type of disability, duration of the disease, potential complications and treatment regimen.

Also, information on chronic conditions including hypertension, heart diseases and diabetes was collected for each study participant. Furthermore, demographic data (age and sex), information on genetic factors and lifestyle/behavioral factors (smoking, alcohol intake, excessive meat consum-

ption and excessive fat consumption) were collected. In addition, all participants were measured height and weight based on which body mass index was calculated (kg/m^2).

The period prevalence of rheumatoid arthritis for the period under study (three years) was calculated based on the overall number of cases (new and existing cases of rheumatoid arthritis) who attended primary health care services in Elbasan district during the period under investigation. On the other hand, the incidence of rheumatoid arthritis in Elbasan district for the period under study was based on the number new cases with the disease and the mean annual population of Elbasan region for the study period.

Fisher's exact test was used to compare sex-differences in the distribution of genetic factors and lifestyle/behavioral factors including smoking, alcohol intake, excessive meat and fat consumption, overall and abdominal obesity, as well as chronic conditions such as hypertension, heart disease and diabetes.

A p-value of $\leq$0.05 was considered as statistically significant in all cases.

Statistical package for Social Sciences (SPSS, version 17.0) was used for all the statistical analyses.

Results

Table 1 presents the distribution of demographic and socioeconomic characteristics among primary health users with rheumatoid arthritis (N=219) in Elbasan district during 2012-2014. Overall, there were 81 (37%) men and 138 (63%) women. During the period under study, there were 31 (14.2%) new cases and 188 (85.8%) existing cases of rheumatoid arthritis in the district of Elbasan. On the whole, 21% of the cases with rheumatoid arthritis had a low educational level (0-8 years of formal schooling), whereas about 10% had a higher educational attainment ($\geq$13 years of formal schooling). About 34% of the cases with rheumatoid arthritis were unemployed compared with 35% of participants who were currently employed. As for the social status, about 33% of individuals reported a lower social status, 45% a middle social status, and further 22% of participants reported a higher social status (Table 1).

Table 1. Demographic and socioeconomic factors among primary health care users with rheumatoid arthritis in Elbasan district during 2012-2014 (N=219)

Variable	Number	Percentage
Sex:		
Men	81	37.0
Women	138	63.0
Total	*219*	*100.0*
Cases:		
New cases	31	14.2
Existing cases	188	85.8
Educational level:		
0-8 years	46	21.0
9-12 years	152	69.4
≥13 years	21	9.6
Employment status:		
Employed	77	35.1
Unemployed	74	33.8
Retired	68	31.1
Income level:		
Low	81	37.0
Middle	87	39.7
High	51	23.3
Social status:		
Low	72	32.9
Middle	98	44.7
High	49	22.4

Based on the number of new cases and the number of the existing cases, the mean annual incidence of rheumatoid arthritis in Elbasan district was estimated at 3.69/100,000 population (31 new cases over a three-year period in a population of 279,991 inhabitants). Conversely, the period prevalence (for the three years under study) was estimated at 78.2/100,000 population (data not shown in the tables).

Table 2 presents the distribution of genetic factors and behavioral/lifestyle factors among primary health care users with rheumatoid arthritis in Elbasan district. Genetic factors accounted for 60% of the female cases with arthritis compared with 46% of the male cases – a difference which was statistically significant (P=0.049). The prevalence of smoking was higher in men than in women (30% vs. 18%, respectively) – a finding which was borderline statistically significant (P=0.064). Furthermore, the prevalence of alcohol consumption was significantly higher in male cases than in female cases (33% vs. 10%, respectively; P<0.001). The prevalence of excessive meat consumption was significantly higher in men compared to women (35% vs. 21%, respectively; P=0.038). However, there was no evidence of a sex-difference in the rates of excessive fat consumption (28% in men vs. 23% in women; P=0.422). In addition, there was no statistically significant sex-difference in the prevalence of the overall obesity, notwithstanding the evidence of a higher prevalence in women compared to men (30% vs. 24%, respectively; P=0.349). On the other hand, the prevalence of abdominal obesity was slightly higher among male cases than female cases (31% vs. 28%,

Table 2. Distribution of genetic and behavioral factors among primary health care users with rheumatoid arthritis in Elbasan district during 2012-2014 (N=219)

Variable	Men (N=81)	Women (N=138)	P-value[†]
Genetic factors:			
No	44 (54.3)[*]	55 (39.9)	0.049
Yes	37 (45.7)	83 (60.1)	
Smoking:			
No	57 (70.4)	113 (81.9)	0.064
Yes	24 (29.6)	25 (18.1)	
Alcohol intake:			
No	54 (66.7)	124 (89.9)	<0.001
Yes	27 (33.3)	14 (10.1)	
Excessive meat consumption:			
No	53 (65.4)	109 (79.0)	0.038
Yes	28 (34.6)	29 (21.0)	
Excessive fat consumption:			
No	58 (71.6)	106 (76.8)	0.422
Yes	23 (28.4)	32 (23.2)	
Overall obesity:			
No	62 (76.5)	97 (70.3)	0.349
Yes	19 (23.5)	41 (29.7)	
Abdominal obesity:			
No	56 (69.1)	99 (71.7)	0.759
Yes	25 (30.9)	39 (28.3)	
Hypertension:			
No	59 (72.8)	96 (69.6)	0.647
Yes	22 (27.2)	42 (30.4)	
Heart diseases:			
No	63 (77.8)	98 (71.0)	0.341
Yes	18 (22.2)	40 (29.0)	
Diabetes:			
No	72 (88.9)	121 (87.7)	0.833
Yes	9 (11.1)	17 (12.3)	

[*] Absolute numbers and their respective column percentages (in parentheses).

[†] Fisher's exact test was used to compare the proportions (percentages) of genetic and behavioral factors among men and women.

respectively; P=0.759). Finally, there was no statistically significant sex-difference in the prevalence of hypertension (27% in men vs. 30% in women; P=0.647), heart diseases (22% in men vs. 29% in women; P=0.341), or diabetes (11% in men vs. 12% in women; P=0.833) (Table 2).

Discussion

This is the first study informing about the magnitude of rheumatoid arthritis in the population of Elbasan district, which constitutes one of the main districts of Central Albania. From this perspective, the current study provides new and useful evidence about the prevalence as well as the incidence of rheumatoid arthritis among primary health care users in Elbasan district. It should be pointed out that there are no estimates about the prevalence or incidence of rheumatoid arthritis in the general population of Albania. Therefore, it is difficult to compare findings from this study conducted in Elbasan district with other regions in Albania. As a matter of fact, the estimates reported in the international literature vary in accordance with the methods used to establish the diagnosis of rheumatoid arthritis (1,13). In population-based studies in developed/industrialized countries, it has been reported in several studies that rheumatoid arthritis affects 0.5%-1.0% of adults (1). Nevertheless, regardless of the methods employed to determine this condition, the prevalence of rheumatoid arthritis has considerable geographical variations (14), with a higher prevalence in Northern Europe and North America and a significantly lower prevalence in many developing and transitional countries (15).

Furthermore, the current study provides evidence on the distribution of selected risk factors among cases diagnosed with rheumatoid arthritis in the adult population of Elbasan district. Genetic factors were more prevalent among female cases, whereas smoking, alcohol intake and excessive meat consumption were more prevalent in male cases. Our findings in this regard are compatible with a recent study conducted in Tirana which included all cases of rheumatoid arthritis diagnosed in primary health centers during the period 2009-2012 (10).

On the other hand, in our study, there were no sex-differences in the prevalence of chronic conditions including hypertension, heart diseases and diabetes. This finding may be related to similar distribution of other co-morbid conditions among men and women with rheumatoid arthritis in Elbasan district.

It should be noted that our study included only cases of rheumatoid arthritis who were primary health care users in Elbasan district. Therefore, findings from this study cannot be generalized to the overall population of Elbasan district. This would require a population-based approach in order to accurately estimate the magnitude and distribution of rheumatoid arthritis in the general population. In any case, our methods for assessment of rheumatoid arthritis were robust and were applied similarly in all cases and under all circumstances. Nevertheless, for the data collected by interviews, we cannot exclude completely the possibility of information bias, especially regarding the self-reported data on different lifestyle/behavioral factors.

Regardless of these possible limitations, our study provides useful evidence about the magnitude and distribution of rheumatoid arthritis in Elbasan district, which constitutes an under-researched area of transitional Albania. Health professionals and policymakers in Albania should be aware of the negative health impact of rheumatoid arthritis in the adult population.

Conflicts of interest: None declared.

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