The Prevalence of Ankylosing Spondylitis in The Eastern Black Sea Region of Turkey

Murat Karkucak¹, Haşim Cakirbay¹, Erhan Capkin¹, Murat Topbas², Mustafa Guler¹, Mehmet Tosun¹, Davut Baltaci³

ABSTRACT

Aim: The aim of this study was to estimate the prevalence of ankylosing spondylitis (AS) in the Eastern Black Sea region of Turkey.

Method: The study was conducted by The Department of Physical Medicine and Rehabilitation, Karadeniz Technical University Medical Faculty, in the urban area in the Eastern Black Sea region of Turkey, which has a population of 459,021 (according to the 2000 national census). A total of 4031 subjects over 20 years-old were enrolled, using the sampling method; 2025 (50.7 %) men and 2006 (49.3 %) women were included in the study. A survey consistent with Modified New York Criteria 1987 was used to diagnose AS in patients. The survey was applied and evaluated by two physical medicine residents and 8 trained medical students. Suspected cases were invited to our clinic.

Result: Forty one out of fifty patients suspected with AS attended our out-patient clinic. Following physical examination, laboratory tests and radiological investigations of those individuals with suspected AS, 10 ones were diagnosed as AS. 9 of 10 patients were male and 1 patient was female. Patients’ mean age was 40.5 ± 8.4 years. The prevalence was estimated to be 0.25 % (95% CI: 0.09 %-0.40 %). It was 0.44 % in men (95 % CI: 0.15-0.73) and 0.05 % in women (95 % CI: 0.0-0.15) according to gender distribution.

Conclusion: The study had value of regional features for evaluating for epidemiology of AS in Turkey. The prevalence of AS was found to be as 0.25 %. A male predominance was noted among AS patients in the study.

Key words: Ankylosing spondylitis, prevalence, Turkey

Karadeniz Technical University, *Department of Physical Medicine and Rehabilitation¹, Public Health² and Family Medicine³, Trabzon, Turkey


Received: 02.08.2010
Accepted: 06.09.2010

Correspondence: Murat Karkucak, MD
Karadeniz Technical University, Medical Faculty, Department of Physical Medicine and Rehabilitation, 61080 Trabzon, Turkey
Phone: 904623775613, Fax: 904623775445
E-mail: muratkarkucak@yahoo.com

European Journal of General Medicine
INTRODUCTION

Ankylosing spondylitis (AS) is a chronic inflammatory disease usually affecting young adults and characterized by an inflammatory enthesiopathy progressing towards ossification and ankylosis. AS is mainly a disease of the spondyloarthropathy (SpA) group. Women are not as commonly affected as men. The prevalence of AS has been determined at between 0.1 % and 1 % in the white population that is usually studied. There are wide variations among different ethnical and racial groups (1-2). The distribution of the HLA B 27 antigen in the population seems to run parallel to that of HLA-B 27 related diseases (3-4). The reported prevalence of HLA-B27 in our country varies between 6.8 % and 8 % (5). Determination of the frequency of AS is important for both the detecting epidemiological data of the disease and providing the information about the number of patients who should receive new drugs, which are highly effective but costly.

The prevalence of AS was determined as 0.14 % in a study performed among military personnel in Turkey (6). In another study, the prevalence of AS in an adult urban population from western Turkey reported as 0.49 % (5). However, there is a lack of satisfactory data regarding the prevalence of AS in the general Turkish population. The aim of this study was to investigate the prevalence of AS in the Eastern Black Sea region of Turkey.

MATERIALS AND METHODS

The was a cross sectional study carried out between March 2002 and June 2004 by the Karadeniz Technical University Medical Faculty Department of Physical Medicine and Rehabilitation in the Eastern Black Sea region of Turkey, including the cities of Gumushane, Trabzon, Rize, Artvı and Giresun. The population of the region was determined as 459,021 in the 2000 census. The sample size was calculated based on a 1% prevalence (P) of AS with a 0.5 % uncertainty level (d), using the formula n: pq/(E/1.96)2 (n: at least sample size; p: expected at highest prevalence-%; q:100-p; E: sampling error-%) (7). We estimated that this would necessitate at least 3746 participants. However, that figure was increased by a further 10 % because of possible reductions in the number of subjects available, due to absence from home or a failure to give informed consent to participation in the study. Subjects were chosen at random from five cities using primary health center household registration records. Of these (n: 4120), 4031 subjects, which is aged 20 years and over, took part in the study, a participation rate of 97.8 %. The examinations were carried out by research physicians in two main phases, a screening phase (almost 15 months) and a main examination (scrutinizing) phase (ten months).

Phase 1: The Screening Survey

Data were collected using the face-to-face questionnaire method. Subjects screened positive if they reported chronic inflammatory back pain (8). Chronic inflam-
The diagnosed patients were also investigated for previous treatment and laboratory findings. All these procedures were performed by a physician specializing in physical medicine and two physical medicine residents. Prevalence values are presented as percentages and 95% CI, and mean age as arithmetic mean ± standard deviation. The comparison of gender prevalence was done by the Chi-square test. A probability value of p< 0.05 was considered statistically significant.

### RESULTS

Of the 4031 participants, 2025 (50.7%) were men and 2006 (49.3%) women. Their mean age was 40.5 ± 8.4 years. Data related to age distribution and prevalence of AS are presented in Table 1. A total of 94 subjects with chronic inflammatory back pain were attempted to contact by a telephone and 61 subjects were reached. Fifty-five subjects initially suspected of having AS were invited to our out-patient clinic. Fourteen of these subjects did not come to our clinic. Ten of the remaining 41 subjects were diagnosed with AS according to the modified New York criteria. The prevalence of AS in the Eastern Black Sea region of Turkey was thus determined as 0.25% (95% CI: 0.09-0.40%).

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>AS (n)</td>
<td>Prevalence</td>
</tr>
<tr>
<td>20-29</td>
<td>629</td>
<td>1</td>
<td>0.16 (0.0-0.47)</td>
</tr>
<tr>
<td>30-39</td>
<td>541</td>
<td>4</td>
<td>0.74 (0.02-1.46)</td>
</tr>
<tr>
<td>40-49</td>
<td>298</td>
<td>3</td>
<td>1.01 (0.0-2.14)</td>
</tr>
<tr>
<td>50-59</td>
<td>194</td>
<td>1</td>
<td>0.52 (0.0-1.52)</td>
</tr>
<tr>
<td>60-69</td>
<td>79</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>70-79</td>
<td>87</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>80+</td>
<td>27</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2025</td>
<td>9</td>
<td>0.44 (0.15-0.73)</td>
</tr>
</tbody>
</table>

### Table 1. Prevalence of AS and distribution of participations in study according to age and gender

*The patients with AS who met the diagnostic criteria were performed HLA-B27 test.*
dl (normal range, 0-0.3 mg/dl) and 40±22 mm/h (normal range, 0-20 mm/h), respectively. Although HLA B27 tested negative in two cases, eight of the 10 cases were positive. Six patients with previously diagnosed were on disease-modifying anti-rheumatic drugs (DMARDs) and Non-steroidal anti-inflammatory drugs (NSAIDs). Four of the patients were newly diagnosed. All cases with AS have been following up for treatment.

**DISCUSSION**

The worldwide epidemiology of AS is generating interest for two main reasons: firstly, epidemiological data may help to discriminate between the role of environmental and genetic factors affecting the pathogenesis of the disease, secondly, new drugs included in biologic agents have been introduced recently. These are effective but costly. The number of patients who should receive the new drugs needs to be estimated. Because of this situation, evaluating of AS prevalence is important. In the white population, which has been studied the most frequently, an AS prevalence of between 0.5 % and 1 % has been determined. Prevalence of AS in different ethnic groups is shown in Table 3 (4, 6, 10-13). The general prevalence of AS was found to be as 0.25 % in our study. This figure is within the lower range of other such studies in European population. This status may be due to some factors such as genetic, environmental and the methodological differences of epidemiological studies.

The first relevant study in Turkey cited in the literature was performed by Yenal et al. They determined an AS prevalence of 0.14% in a military population consisting of 1436 participants, representing prevalence specified to gender (6). It also involved certain specific age groups (20-22 years). Regarding age of onset of the disease, the study contains limited information with which to evaluate the prevalence of AS in the Turkish population. In a recently study of adults aged 20 and above in an urban area of Izmir, in Turkey, prevalence of AS was reported to be 0.49 %. It found that the prevalence of AS among women was close to that in men (female/male =0.82/1). It was a striking finding. The male prevalence of AS in...
our study was higher than those in epidemiological studies (male/female = 8.8). There are many factors that may contribute to genetic and the social culture characteristics of women populations in the study area. In addition, the disease may be slowly progressive and atypical in patients women with AS. In studies, AS was determined to be 2 to 3 times more frequent in men than in women (5). Boyer at al. determined a prevalence of AS of 0.4 % among Alaskan Eskimos (14). Alexeeva et al. determined an AS prevalence of 1.1 % and an HLA B 27 incidence of 34 % in the Chukhsa population in Russia. Considering that the incidence of HLA B 27 is 25-40 % among Eskimos, this level is much lower compared with that of other ethnic groups that have a high HLA B 27 prevalence (15). This indicates that other factors such as genetic, environmental and infectious elements, in addition to HLA B 27, play a role in its pathogenesis. Saraux et al. investigated SpA prevalence in France in 2001 a study involving 9395 subjects and conducted over the telephone. They determined a SpA prevalence level of 0.30 %, which is with no difference between women and men, as a result of their study of already diagnosed and suspected subjects. It was detected that AS and psoriatic arthritis were the most common disease included in SpA groups. Prevalence was 0.19 % for psoriatic arthritis and 0.08 % for AS (16). AS is seen in the second and third decades, mostly in males, and to be associated with HLA B 27 in 90-95 % of patients (17). Nine of our 10 patients were male, and age of onset was 28.1±4.3 y. HLA B 27 was positive in eight patients (80 %). HLA B 27 prevalence is about 8 % in the general white population (of Western European extraction), with somewhat higher frequencies in the Scandinavian and some Eastern European populations (10-16%) (18). The prevalence of HLA B 27 in the healthy population in Turkey is between 6.8 % and 8 % (5).

One limitation of this study is that 14 out of the 55 individuals suspected with AS as a result of the questionnaire failed to attend our out-patient clinic, despite being invited two times to do so. There is a possibility of new AS cases arising from among these individuals. In addition, it may be difficult to determine AS cases following a mild course using the questionnaire method. Our study was a cross-sectional one and the fact that it was performed in five cities in Eastern Black Sea region represents an important source of data for Turkey. It is the first study of AS prevalence of in population from northern Turkey.

Our epidemiological study of adults of 20 and above in the Eastern Black Sea region of Turkey determined to be 0.25 % prevalence of AS. Men show clearly predominance among AS patients. Further studies are now needed to elucidate the epidemiological data from other locations in Turkey in order to further our understanding of the most effective ways to improve the health of the Turkish population.

Appendix 1. Screening form for ankylosing spondilitis
1. Name-Surname: Phone:
2. Your Address: 
3. Age:
4. Gender: a) Male  b) Female
5. Occupation: Education level:
6. Marital Status: a) Married  b) single  c) widowed
7. Have you ever had low back pain or back stiffness on awakening, which lasted over a period of at least 3 months?
   a) Yes   b) No
   (If your answer is "yes" for 7.th question)
8. Does your back pain and stiffness improve by exercise?
   a) Yes         b) No
9. Have you had limited back movement limitation?
   a) Yes          b) No
10. Do you suffer from unilateral or bilateral hip/buttock pain?
    a) Yes   b) No

ACKNOWLEDGEMENTS
We thank the pollsters, the subjects who participated in this survey and Ahmet Ayar (PhD, Department of Physiology, KTU Medical School) for critically reading of manuscript and helping to improve the English.

REFERENCES
4. Gömőr B, Gyödi E, Bakos L. Distribution of HLA and ankylosing spondylitis in the Hungarian population.
The prevalence of ankylosing spondylitis in Turkey


