Quality of life in turkish ankylosing spondylitis patients

Introduction

Ankylosing spondylitis (AS) is a chronic inflammatory rheumatological disease characterized by spinal inflammation, usually in the form of sacroiliitis and spondylitis which may lead to syndesmophyte formation and ankylosis in the further course of the disease [1]. AS most commonly begins in the second and third decade of life as persistent inflammatory back pain that can already be associated with significant loss of function, work disability and impaired quality of life early in the disease [2-4].

In studies conducted previously, risk factors affecting the functional status and quality of life in patients with AS have been evaluated. Age, duration of symptoms, pain severity, stiffness, peripheral arthritis, total hip arthroplasty, smoking habit of patient, having history of more physically demanding jobs and lower levels of education have been demonstrated as risk factors for functional limitations and quality of life in patients with AS [3-8]. In other rheumatic diseases, level of education has been found to be possibly associated as a risk factor [9-11].

In this study, we planned to determine the possible risk factors affecting functional situation and quality of life in Turkish patients with AS.

Materials and Methods

Eigthy nine Turkish AS patients diagnosed with AS according to the Modified 1984 New York Criteria who were admitted to the Rheumatology Outpatient Clinics of Akdeniz University and Adnan Menderes University were included in the study. This study was approved by the Research Ethics Committee

Yet, one patient, who did not want to participate, was excluded from the study. Thus, a total of 88 volunteer Turkish AS patients consisting of 24 females (27. 3%) and 64 males (72. 7%) with their age ranging from 21 to 81 were enrolled in the study.

Demographic information of the patients was obtained, their heights and weights were measured and these values were recorded. Then body mass indices (BMIs) of the patients were calculated by dividing the body weight as kilograms by the square of height in meters. Levels of education of the patients were investigated and recorded (0: illiterate, 1: literate, 2: primary school graduate, 3: secondary school graduate, 4: high school graduate, 5: university graduate). Dates of diagnosis of the patients, drug(s) they used, their duration of morning stiffness (as minutes) were investigated and recorded. Patients with diagnosis of AS who were admitted to the Rheumatology Outpatient Clinics are routinely instructed with a home-based exercise program. Exercises recommended are as breathing and posture exercises, and range of motion/stretching exercises for all joints. Patients were inquired about the extent they do these recommended exercises, and they were rated as 0 (not doing the exercises), 1 (doing irregularly or occasionally), 2 (doing regularly every day), and the results were recorded.

Smoking habits of the patients were evaluated. Those who have smoked at least one cigarette a day for a period of longer than 6 months during their lifetime were included in the smoking group. Whether or not the individuals in this group were currently smoking and how many cigarettes a day and for how many years they have smoked were determined. “ Packs/year” term

was calculated by multiplying amount of cigarettes (as packs) smoked daily by smoking period (as years).

Indices have been developed to measure the activation status, functional status, spinal mobility values and quality of life of patients with ankylosing spondylitis. Bath AS Disease Activity Index (BASDAI), developed for evaluating disease activity, consists of 6 visuel analog scale (VAS) measurements comprising of fatigue, spinal and peripheral joint pain, severity and morning stiffness [12]. Bath AS Functional Index (BASFI), developed for functional evaluation, was determined to have been superior regarding sensitivity to the change to the Dougados Functional Index (DFI) which was developed for the same purpose [13]. Bath AS metrology index (BASMI) was developed by evaluating 20 different clinical assessment methods and selecting 5 among them with the property of the highest validity, reliability, repeatability, and sensitivity to the change [14]. Developed to assess the quality of life of patients with AS, Ankylosing Spondylitis Quality of Life Questionnaire (ASQoL) has been demonstrated to be a valid and reliable tool that can be used both in clinical practice and in scientific research [15].

To evaluate the functional status, disease activity, spinal mobility and quality of life of the patients, BASFI, BASDAI, BASMI and ASQoL scales were used respectively. All indices were assessed by the same physician. Turkish versions of BASFI, BASDAI and ASQoL were used. The reliability of the Turkish versions of BASFI, BASDAI, and ASQoL has been confirmed [16-19].

BASMI is a combined index comprising five assessments of spinal mobility in AS patients. The index include assessments of lateral lumbar flexion, tragus-to-wall distance, lumbar flexion, intermalleolar distance and cervical rotation [20]. These measurements have been found to be clinically practical and reliable in reflecting axial status [1]. In our study, measurements of tragus-to-wall distance, modified Schober, cervical rotations (mean of the sum of right and left rotations was taken), lumbar lateral flexion difference (mean of the sum of right and left lateral flexion differences was taken), intermalleolar distance were performed by the same physician on all patients to obtain BASMI score. Apart from these mobility assessments performed, occiput-to-wall distance, chin-to-sternum distance, chest expansion, thoracic Schober, lumbar Schober, hand-to-ground distance and intermalleolar distance were measured.

As laboratory values of the patients, erythrocyte sedimentation rate (using Standard Westegren Method) and serum C-reactive protein (CRP) levels were measured.

SPSS 14. 0 (SPSS Inc., Il., USA) software package was used for data analysis. Results for continuous variables were presented as maximum, minimum and mean ± standard deviation (SD). Descriptive statistical method was used to obtain these values. For the correlation analysis of the results, Pearson Correlation test was used. Multivariate regression models were constructed to evaluate associations between identified variables. A p value of <0. 05 was deemed as statistically significant. In tables, p <0. 05 and p <0. 01 were indicated as “*” and “**” respectively.

Results

Sixty four male and 24 female volunteer patients with Turkish AS with their ages ranging from 21 to 81 were included in the study. Minimum, maximum, and mean and standard deviation (SD) of all values found for the patients are shown in Table 1.

The frequency and percent of the education levels and drugs that the patients were used for AS were presented in Table 2. Table 2. Frequency and percent of the education levels , exercises and drug(s) they used.

Correlations of Bath AS indices (BASFI, BASDAI, BASMI) and ASQoL with age, gender, BMI, educational level, duration of disease, morning stiffness, smoking and home-based exercise status were examined. BASMI was found to have correlation with the age (r= 0. 40, p <0. 01), the level of smoking habit (r= 0. 36, p <0. 01), and duration of disease (r= 0. 54, p <0. 01). BASDAI was found to be correlated with morning stiffness (r= 0. 50, p <0. 01) and exercise(r=-0. 25, p <0. 05); BASFI with the age (r= 0. 26, p <0. 05), BMI (r= 0. 26, p <0. 05), morning stiffness (r= 0. 32, p <0. 01), smoking (r= 0. 33, p <0. 01) and exercise (r=-0. 29, p <0. 05) status of patient; and ASQoL with the level of education (r=-0. 25, p <0. 05) and morning stiffness (r= 0. 36, p <0. 01).

Correlations of Bath AS measurement indices with ESR and CRP levels were examined. CRP was found to be positively correlated with BASDAI (r= 0. 46, p <0. 01) and ASQoL (r= 0. 31, p <0. 01).

Correlations of BASDAI, BASFI and ASQoL with mobility assessment values were examined. BASFI was correlated with occiput-to-wall distance (r= 0. 35, p <0. 01), tragus-to-wall distance (r= 0. 33, p <0. 01), chin-to-sternum distance (r= 0. 41, p <0. 01), Schober (r=-0. 35, p <0. 01), modified Schober (r=-0. 25, p <0. 05), thoracic Schober (r=-0. 42, p <0. 01), chest expansion (r=-0. 37, p <0. 01), intermalleolar distance (r=-0. 25, p <0. 05), lateral flexion (r=-0. 34, p <0. 01) assessments. ASQoL and BASDAI were not in any way correlated with mobility assessments.

Correlations of Bath AS measurement indices (BASDAI, BASMI and BASFI) and ASQoL scale with each other were examined. While a correlation was found between BASFI with BASMI (r= 0. 45, p <0. 01), BASDAI (r= 0. 63, p <0. 01) and ASQoL (r= 0. 74, p <0. 01), a correlation was again determined between BASDAI and ASQoL (r= 0. 67, p <0. 01).

Multivariate regression models were constructed to evaluate the relations among identified variables.

-In first model, while BASFI score was dependent variable, morning stiffness, smoking, exercise, age and BMI were independent variables. The variance of the BASFI score was 28% and p value was found to be 0. 000. The morning stiffness (Beta= 0. 25, p= 0. 015), smoking (Beta= 0. 25, p= 0. 012) and exercise (Beta=-0. 20, p= 0. 046) were independently associated with the BASFI score. In other regression model was constructed between BASFI with BASMI, and BASDAI. This model was explained 55% of the variance of the BASFI score (p= 0. 001). BASMI (Beta= 0. 40, p= 0. 000) and BASDAI (Beta=

0. 59, p= 0. 000) were independently associated with BASFI. This results were demonstrated in Table 3.

-In second regression model, ASQoL was dependent variable and education, CRP, and morning stiffness were the independent variables. The variance of ASQoL was 22% and p value was 0. 001. The education level (Beta=-0. 29, p= 0. 006) and morning stiffness (Beta= 0. 40, p= 0. 000) were independently associated with The ASQoL. In final regression model ASQoL was dependent variable and BASDAI, BASFI and BASMI were the independent variables. The variance of ASQoL was found as 62% and p value was determined as 0. 000. BASDAI score (Beta= 0. 31, p= 0. 000) and BASFI (Beta= 0. 59, p= 0. 000) were associated with ASQoL. (Table 4).

-In the other model, the dependent variable was BASMI and independent variables were duration of disease, smoking, age and BMI. This model explained 42% of the variance of the BASMI score (p= 0. 000). The duration of disease (Beta= 0. 47, p= 0. 000) and smoking (Beta= 0. 32, p= 0. 000) were independently associated with the BASMI score. This results were presented in Table 5.

-Finally, In a other model, BASDAI was dependent variable and exercise and CRP were defined as independent variables. There were no relations between exercise and CRP with BASDAI.

Discussion

In the present study, there was a positive correlation between the duration of morning stiffness and BASFI and ASQoL. The functions and quality of life

worsened with increasing duration of morning stiffness. According to this result, we see the importance of treating the morning stiffness of the patient with AS. By eliminating morning stiffness, we both enable patient to better perform his/her daily activities and improve his/her quality of life. These results were found to be consistent with previous studies [3-8, 20]. A positive relation was found between duration of disease and BASMI in patients with AS. As the duration of disease increased, the extent of its effect on patient increased and it affected the mobility of patient negatively.

Patients were inquired about the presence of smoking habit, and it was calculated as and recorded packs/year if it was present. Mobility and functional levels of AS patients were affected negatively as the level of smoking habit increased. As a result, we see the importance of smoking habit in patients with AS. Therefore, suggestions with regard to quitting smoking are indications of improvement both in performance of daily activities and in mobility of patients. Averns et al have found in a study they conducted that, when they compared lumbar Schober test, hand-to-ground distance and occiput-to-wall distance of smokers and non-smokers, these mobility assessments were significantly limited in smokers [21]. Similarly, in a study they conducted in patients with AS, Ward et al have found that limitation in functional and daily activities in patients who were current smokers was greater compared to those who had quit smoking or who had never smoked [22]. These results were found to be consistent with our study.

In a few studies, benefits of exercise in patients with AS on severity of symptoms, mobility, functional and cardiovascular capacity, and psychological status were reported [23-29]. Bodur et al. studied the quality

of life and related variables in nine-hundred and sixty-two patients with AS [3]. In the conclusion, they have found in patients with AS, the most significant variables associated with quality of life were BASDAI, BASFI, fatigue and pain. Analay et al. investigated the effectivenes of intensive group exercise in 45 AS patients and found that group exercise in hospital could been more effective than home-based exercises at reducing impairment associated with ankylosing spondylitis [27]. However, Karapolat et al. compared the impact of group-based exercise programme and a home-based exercise programme on Bath Ankylosing Spondylitis Indices, depression and quality of life in patients with AS. In the conclusion, no statistically significant changes were detected in both exercise groups in this study [26]. Group and home-based exercise programmes are efficient in improving symptoms and mobility and had an important effect on quality of life in patients with AS. Durmus et al. studied the effects of home-based exercise program on quality of life, fatigue, and depression in patients with AS [28]. Fourty three paients were included in this study to this aims. They found home-based exercise programs are very effective in improving quality of life and reducing fatigue. Because of these advantages, home-based exercise programe sould be advised for the management program in AS in addition to medical treatments. For this reason, in the treatment of AS, exercise is a cornerstone. In the presented study, the status of doing home-based exercise instructed to patients was found to be correlated with BASFI. We see here again that exercises corrected the functions in patients with AS. According to this result, patients should be inquired about whether they do their exercises, and should be recommended to do them regularly.

In our study, we examined the correlation of Bath AS measurement indices with mobility measurement values. A significant correlation was found between BASFI and measurements. As a result, the greater the joint motion limitation of the patient is the more limitation there is with respect to performing daily activities. We also examined the correlation between BASDAI with each one of mobility measurements, but could not find any association. Haywood et al. have found in a study they conducted with 150 patients with AS that there was a correlation between spinal mobility and BASDAI [29]. According to our study, limitation in mobility of patients is not correlated with disease activity. Fallahi et al. found the correlation between spinal mobility and ASQoL [30]. Acoording to our study, we did not find any relation when we examined the correlation of ASQoL with mobility measurements.

By testing the relations of between BASMI and BASDAI with BASFI, we found BASFI scores to be associated with BASMI and BASDAI. In the conclusion, as the mobility assessments of patients were limited and disease activities of patients increased, their functions were affected negatively. Futhermore, the quality of life of patients with AS (ASQoL) was found to be association with disease activity (BASDAI) and functional level (BASFI) of the patients in this study. According to this results, as the function patient was limited and disease activity was increased, quality of life were impaired in patient with AS. Finally, negative relation was found between education levels of patients and ASQoL scores in this study. In conclusion, quality of life was found to be better in patients who had higher to the education levels. Ward et al. found negative relations between education levels and functional limitations in AS

patients [7]. Fallahi et al. showed that quality of life in AS was worse in patient with lower educational status [30]. They defined that functional limitations were less severe among those with higher levels of education in the patients with AS. The patients with higher levels of education can have more information about AS and thus, they can discharged better to orders of physicians and cope better with the disease-related difficulties.

According to the results of our study, duration of disease, duration of morning stiffness, adherence to the home-based exercise program, smoking habit, range of motion of joints of patients appear to be the factors that have effects on functions, activities and quality of life of patients with AS. As a result, among these factors we cannot produce impacts on the duration of disease. However, duration of morning stiffness, performing regularly home-based exercise program, quitting smoking and eliminating or minimizing joint motion limitation are changeable factors, and patients can improve their functions and quality of life by means of realizing these. Therefore, we believe that specialists who follow patients with AS can influence quality of life and functions of patients by educating and inspiring them in this way at every visit.