Life quality of men with ankylosing spondylitis: association with the disease course and the structural and functional state of bone tissue

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Abstract. Background. Multiple peculiarities of ankylosing spondylitis clinical course have a significant influence on the physical, mental and social status of patients. Systemic loss of bone tissue manifesting itself through the development of osteoporosis and its complications is not excluded either. However, currently there is no sufficiently clear information on the influence of osteoporosis or its metabolic components, as well as peculiarities of the disease clinical course on the physical and mental health components in the patients suffering from ankylosing spondylitis. Purpose: to study the quality of life indices using the SF-36 and HAQ questionnaires in men suffering from ankylosing spondylitis and to assess the associations of these indexes with the disease clinical course as well as structural and functional state of bone tissue. Materials and methods. 105 men suffering from ankylosing spondylitis and 25 practically healthy persons of the appropriate age and sex forming the control group were examined. In order to assess the quality of life indices, the SF-36 and HAQ questionnaires were used. Results. It was established that men suffering from ankylosing spondylitis showed reliably lower indices of physical (37.3 ± 1.5 points) and mental (44.2 ± 1.7 points) health components if compared to the control group (99.1 ± 0.3; 97.4 ± 0.7 points respectively). Under conditions of the low bone mineral density, quality of life indices (PCS; MCS) were only 12.2–7.1 % lower than in the patients with a preserved bone mineral density. It was shown that under conditions of the Vitamin D deficiency, quality of life components were significantly worse, specifically on account of the mental health component (p < 0.05). It was also established that the lower quality of life was closely associated with a high activity of the inflammatory process (ASDAS-CRP, BASDAI) and a high dose of glucocorticoids. Conclusions. Men suffering from ankylosing spondylitis show a significant reduction of life quality indices by the SF-36 (PCS; MCS) and HAQ questionnaires, which demonstrate no association with the age of the patients (except for MCS), disease form and duration, structural and functional state of bone tissue. However, they are significantly worse in subjects with the Vitamin D deficiency, a high dose of glucocorticoids and high disease activity.

Keywords: life quality; ankylosing spondylitis; osteoporosis

Introduction

The recent decades have been marked by a dynamic exploration of the specific life quality parameters observed in the patients suffering from various diseases. The key role of life quality association is observed with chronic diseases which are constantly progressing and resulting in the restricted normal functioning. The ankylosing spondylitis (AS) is no exception, being the second most prevalent inflammatory rheumatic disease characterized by the preponderant spinal and sacroiliac joint disorders. The pain, overall restriction of movement, fatigue are among the principal symptoms for the AS patients. Along with the inflammatory component typical for this type of disease, those symptoms bring functional restrictions, a gradual loss of spinal mobility and life quality deterioration. It is well-known that in the first 5 years of the disease about 20 % AS patients register a considerable limitation of their mobility, after over 10 years of the disease – 40 % AS patients, in case of the attending peripheral joint disorders – 55 % AS patients [1]. According to the reference sources, the AS patients have an overall lower health component typical for this type of disease, those symptoms bring functional restrictions, a gradual loss of spinal mobility and life quality deterioration.
life quality compared to the general population; however, the patients with comorbidities register an even more reduced one [2, 3]. In particular, according to Shevchuk S. et al. (2020), the life quality evaluated by the SF-36 and HAQ questionnaires was significantly lower in the AS patients with an anemic syndrome than in the patients with no anemia present [4]. According to Rencher N. et al. (2019), the life quality evaluated by the ASQoL scale was statistically lower for the AS patients with an attending fibromyalgia [5]. Such a factor as a constant nonsteroidal anti-inflammatory drug (NSAIDs) use was found to be a prognosticating factor of a low life quality (confirmed by the ASQoL questionnaire findings), which we consider interesting and topical [6]. On the one hand, the principal complaint leads to a deteriorated patient life quality; while on the other, the prescribed drug treatment affects the patient life quality in a similarly negative way. The AS patients tend to present a systemic bone loss associated with osteoporosis and its complications, vertebral deformations, also resulting to the deterioration of all life quality components [7, 8]. Many studies confirm that the vertebral and non-vertebral fractures undermine the life quality, restrict the physical and social activity of the osteoporotic patients [9]. However, there are no references proving the influence of attending osteoporosis on the AS patient life quality. We have found no data on the contribution of other osteoporosis risk factors (age, duration of the disease, Vitamin D deficiency, glucocorticoid use) into the physical and mental components of health. The purpose of our study was to explore the life quality parameters of the AS male patients evaluated according to the SF-36 and HAQ questionnaires and to estimate their association with the disease course and structural-functional bone state. 

Materials and methods

The clinical trial involved 105 AS male in-patients of the Rheumatology Department of the Scientific and Research Institute of Invalid Rehabilitation by the National Pirogov Memorial Medical University. The trial was approved by the University’s Committee of Bioethics. The AS diagnosis was based on the ASAS criteria [10]. The main group included the AS male patients whose mean age was 40.7±0.8 years, with 85.7 % patients aged up to 50 years. The structural-functional bone state was measured among the patients of pre-50 age category. The mean duration of disease was 8.7±0.5 years. Most patients (81 %) were diagnosed with a chronic and slow-progressing AS, while 19% were diagnosed with a fast-progressing AS. The control group comprised 25 virtually healthy individuals, representative as to their age and sex.

All the patients were tested in terms of glucocorticoid (GC), Calcium and Vitamin D use. We have calculated a cumulative GC dose for each of the patients, accounting for the duration of GC use. All the patients were examined by a comprehensive clinical-laboratory system of diagnostic tools. The clinical AS activity was measured according to the BASDAI and ASDAS-CRP indices [11, 12].

The life quality evaluation was performed by the Medical Outcomes Study Short Form (SF-36) questionnaire, including 36 items and 8 scales: Physical Functioning (PF), Role-Physical Functioning (RP), Bodily pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional Functioning (RE) and Mental Health (MH). All in all, the questionnaire items construct an idea of two health-related components: Physical Health (PH) and Mental Health (MH). Each of the scalar values varied from 0 to 100, where 100 stood for an absolute health [13].

In order to assess the functional status and AS patient life quality, we have used the Health Assessment Questionnaire (HAQ) involving 20 items grouped according to 8 subscales with 2-3 items in each of them. Every item referring to the ability of the patient to perform certain activities in their daily life has answers coded from 0 to 3: "0" stands for no difficulties, "1" stands for minor difficulties, "2" stands for major difficulties, "3" stands for an inability to perform any activities at all [14].

The biochemical bone synthesis markers (osteocalcin and procollagen type I N-propeptide (PINP)) were evaluated by the immunoenzyme method, using the "N-MID Osteocalcin ELISA Kit" (Immunodiagnostics Systems, UK) and "Human PINP (Procollagen I N-Terminal Propedite) ELISA Kit" (Elabscience, USA). The bone resorption marker (N-terminal telopeptide (NTx)) was assayed by the immunoenzyme method, using the "Human NTXII" kit (Elabscience, USA, catalog №: E-EL-H0836, Lot: 31DCADWX939) according to the producer’s specifications. The Vitamin D rate was measured by "25-OH Vitamin D Total (Vit-D direct) Test System" (Monoblind Inc., USA). The Vitamin D status was considered optimal at 30-50 ng/ml, insufficient at 20-30 ng/mL, and deficient at < 20 ng/mL.

The lumbar and femoral neck bone mineral density (BMD) was evaluated by dual-energy X-ray absorptiometry "Hologic Discovery Wi" (S/N 87227) device. For the males younger than 50 years, the Z-criterion was used; whose reduction of ≤−2.0 SD and over indicated the bone loss.

The statistical analysis of findings was performed according to the universally accepted methods of variational statistics, "Microsoft Office Excel 2007" and "Statistica 6.1" statistical software package, parametrical and non-parametrical methods. The number of observations (n), variables (abs., %), mean arithmetic value (M) and mean deviation of the mean arithmetic (m) value. Under a correct distribution of data, the variability of sample values was analyzed according to the Student’s t-test; while under an incorrect distribution – by the Mann–Whitney U-test. In order to establish associations among the values, the Pearson correlation coefficient (r) was calculated. The statistical significance was set at p<0.05. In order to compare the significance of differences among the dependent variables, we have used the Fisher's exact test.

Results

The present study found that the AS male patients had life quality standards which were lower than the control group’s according to each of the SF-36 questionnaire sub-scales (Table 1). For instance, the scales evaluating the physical health showed the biggest difference of Role-Physical Functioning (RP: 14.0±3.1 vs. 99.0±0.6 points) and
Pain (P: 37.2±1.6 vs. 100.0±0.0 points) indices between the groups of AS patients and control group. Somewhat lower differences were revealed as to the General Health (GH: 40.5±1.6 vs. 97.5±0.9 points) and Physical Functioning (PF: 57.4±1.9 vs. 100.0±0.0 points). The scales evaluating mental health have also demonstrated a statistically significant variation between groups; the biggest being associated with the Role-Emotional Functioning (RE: 22.2±3.9 vs. 98.2±0.7 points) and the smallest being associated with the Mental Health (MH: 56.0±1.6 vs. 96.6±1.0 points). The general cohort of AS patients revealed a general reduction of physical component rather than the mental component: the cumulative indices of PSH and MSH were 37.3±1.5 and 44.2±1.7 points.

The overall HAQ index of AS patients amounted to 0.9±0.1 points. The HAQ questionnaire’s scales revealed a moderate extent of deviation in the following categories: “Dressing”, “Standing Up”, “Reaching” and “Mobility, activeness”, other types of activities (“Eating”, “Walking”, “Hygiene”, and “Gripping”). They were not as different as the control group values.

The study did not reveal any association between the age and physical component of life quality by SF-36 (PCS) (Table 2). For instance, the lowest PCS value (35.8±1.8 points) was found in the age group of 35-50 years, while in the group of patients aged up to 35 and over 50 years the PCS values did not actually differ. By contrast, the mental health component (MCS) was significantly diminishing along with the patients’ advancing age; being the lowest in the age group of those over 50 years (38.9±3.9 points). There was no association found between the life quality indices and duration of the disease. At the same time, there was a marked tendency towards the reduction of physical and mental component summaries with the presence of a peripheral disease form. The increase of GC cumulative dose was negatively impacting the physical and mental component of life quality. For instance, the group of patients with a high cumulative GC dose had PCS and MCS indices 1.2 times as low (33.4±1.9 and 38.3±1.8 points) as the indices of those individuals who had a low cumulative GC dose (38.6±1.8 and 46.1±2.1 points).

Our analysis of life quality parameters by the SF-36 and HAQ in correlation with the BMD’s Z-score did not reveal any significant differences among the groups. The only tendency we have observed was the deterioration of health physical component in the osteoporotic patients (Table 3). It was only in the group of osteoporotic patients that the general health index (GH) was 1.2 times as low (35.8±2.1 points) as the one characteristic of the patients with a normal BMD status (43.4±2.7 points). The physical and mental component summaries also tended to diminish under the low BMD. At the same time, the HAQ-questionnaire findings did not reveal any differences among the examined groups.

At the same time, the life quality by SF-36 was associated with Vitamin D deficiency (Table 4). In particular,

| Table 1. The life quality indices of the AS patients and control group, points |
|-----------------|-----------------|-----------------|
|                 | Life quality indices | Control | AS patients |
| **HAQ categories** |                 |       |              |
| Dressing        | 0.0±0.0          | 1.3±0.1* |
| Standing Up     | 0.0±0.0          | 1.06±0.1* |
| Eating          | 0.0±0.0          | 0.32±0.1* |
| Walking         | 0.0±0.0          | 0.62±0.1* |
| Hygiene         | 0.0±0.0          | 0.85±0.1* |
| Reaching        | 0.0±0.0          | 1.38±0.1* |
| Gripping        | 0.0±0.0          | 0.4±0.1*  |
| Mobility, activeness | 0.0±0.0          | 1.37±0.1* |
| Overall index   | 0.0±0.0          | 0.9±0.1*  |
| **SF – 36 categories** |                 |       |              |
| Physical Functioning (PF) | 100.0±0.0      | 57.4±1.9* |
| Role-Physical Functioning (RP) | 99.0±0.6      | 14.0±3.1* |
| Pain (P)        | 100.0±0.0       | 37.2±1.6* |
| General Health (GH) | 97.5±0.9       | 40.5±1.6* |
| Vitality (VT)   | 100.0±0.6       | 44.1±1.4* |
| Social Functioning (SF) | 95.8±1.6      | 54.3±1.9* |
| Role-Emotional Functioning (RE) | 98.2±0.7     | 22.2±3.9* |
| Mental Health (MH) | 96.6±1.0       | 56.0±1.6* |
| Physical Component Summary (PCS) | 99.1±0.3      | 37.3±1.5* |
| Mental Component Summary (MCS) | 97.4±0.7       | 44.2±1.7* |

Note: Data presented as M ± m; PCS - Physical Component Summary; MCS - Mental Component Summary; * – indicated significant differences to the control group, p<0.05.
the mean values of Physical Component Summary (PCS) and Mental Component Summary (MCS) were 9.7-17.3 % lower in the group of patients with the Vitamin D deficiency than in the group of patients with an optimal Vitamin D rate. The Mental Health (MH) index was significantly lower for the patients with Vitamin D deficiency. By the HAQ questionnaire, the patients with an optimal Vitamin D rate had somewhat better indices of functional status (0.8±0.1 points) than the ones having an insufficient Vitamin D rate (0.9±0.1 points).

The further part of our study assesses the association between the bone turnover markers and AS patients' life quality indices (Table 5). Under the low osteocalcin rate, the Physical Component Summary (PCS) and General Health (GH) indices were somewhat lower than under the optimal rate; while the mental health components tended to diminish under the low rates of this marker. There was no association found between the life quality indices and N-terminal telopeptide (NTx) resorption marker concentration. In particular, under the optimal NTx rate, the Physical Component Summary (PCS) and Mental Component Summary (MCS) accounted for 35.2±1.8 and 41.6±2.4 respectively; while under the elevated NTx rate, they accounted for 39.5±4.0 and 47.4±4.5 respectively. The functional status evaluated by the HAQ index did not have any association with the biochemical bone turnover markers.

Despite the findings presented above, the life quality indices are closely associated with a high degree of inflammatory activity (Table 6). In particular, the group of patients with a high degree of disease activity (BASDAI > 4) had a mean PCS index by SF-36 equal to 34.3±1.3 points, compared with 44.7±3.6 points characteristic of the subgroup of patients with a low disease activity (BASDAI < 4); thus, the Physical Component Summary (PCS) turned out to be 23.2 % lower. The Mental Component Summary (MCS) was significantly diminishing in the group characterized by the high degree of disease activity (BASDAI > 4). The similar regularities were observed with the ASDAS index, where the life quality indices (SF-36 – PCS and MCS) tended to be reduced in the group of subjects with an extremely high disease activity (ASDAS-CRP>3.5 points). The low functional capacity assessed by the BASFI was also associated with a low life quality by the patients. For instance, in the group of low functional status (BASFI > 4 points) the mean PCS and MCS indices were 10.7 % and 14.3 % lower than the ones of the group with a preserved functional capacity (BASFI < 4 points). By the HAQ questionnaire findings, the groups with a high disease activity and a low functional capacity also registered the highest mean values of the corresponding indices.

The negative role of a high disease activity and low functional capacity as a determinant of the AS patients’ life

Table 2. The life quality indices depending on age, disease duration, AS forms and GC load (by the SF-36 and HAQ questionnaire data)

| Group                      | SF-36   | HAQ     |
|----------------------------|---------|---------|
|                            | PCS     | MCS     |         |
| Age of patients            |         |         |         |
| <35 years (n=28)           | 37.3±1.5| 44.2±3.2| 0.9±0.04|
| 35-50 years (n=62)         | 35.8±1.8| 43.2±2.2| 0.9±0.1 |
| >50 years (n=15)           | 37.1±3.2| 38.9±3.9*| 0.9±0.1 |
| Correlation criterion, r   | -0.09   | -0.1390 | 0.09    |
| Disease duration           |         |         |         |
| <5 years (n=20)            | 37.6±3.8| 44.8±4.3| 0.8±0.1 |
| 5-10 years (n=53)          | 36.1±1.8| 45.4±2.4| 0.9±0.1 |
| <10 years (n=32)           | 39.0±2.9| 41.7±2.8| 0.9±0.1 |
| Correlation criterion, r   | 0.08    | -0.05   | 0.01    |
| AS forms                   |         |         |         |
| Central (n=73)             | 36.4±1.6| 43.1±1.9| 0.9±0.0 |
| Peripheral (n=32)          | 32.8±1.9| 42.8±2.8| 1.0±0.1 |
| GC load                    |         |         |         |
| Cumulative GC dose < 21.6 g (n=79) | 38.6±1.8 | 46.1±2.1 | 0.9±0.1 |
| Cumulative GC dose > 21.6 g (n=26) | 32.4±1.86 | 35.3±1.86 | 0.9±0.1 |
| Correlation criterion, r   | -0.13   | -0.14   | 0.16    |

Notes. The sign of * indicates the significant differences in comparison with the indices of the patients younger than 35 years of age (p<0.05); the sign of # indicates significant differences in comparison with the group of patients with a central form of disease (p<0.05); the sign of & indicates the significant differences in comparison with the patients using the cumulative GC dose <21.6 g (p<0.05); the sign of @ indicates the minor correlation (r = -0.2 to -0.3).
quality was further corroborated by a significant correlation among PCS, MCS, HAQ items and BASDAI (r = -0.38; -0.30; 0.29), ASDAS (r = -0.20; -0.16; 0.27) та BASFI (r = -0.23; -0.27; 0.37, respectively).

Discussion

The findings of our study demonstrate the AS patients to have a worse physical condition compared to the control group as far as every aspect of their life were concerned; this is why the scales measuring the physical component of the patients’ condition got more affected. For instance, the Physical Component Summary (37.3±1.5 points) was 16% worse than the Mental Component Summary (44.2±1.7 points). In terms of the scales measuring the physical condition, the worst values were revealed with the Pain index (37.2±1.6 points) and Role-Physical Functioning index (14.0±3.1) as the latter ones are conditioned by the physical condition.

The scales measuring the patients’ mental condition have also registered the statistically distinct differences of indices referring to the AS patients versus control group, the worst being registered for the Role-Emotional Functioning (RE) (22.2±3.9 points). Our findings are in line with the ones of other researchers, who observe a significant decrease in the AS patients’ life quality. This decrease mostly concerns the physical component rather than the mental one, though both components are considerably diminished compared to the control group [15, 16]. J. Huang et al. (2017) claim the Physical Component Summary by SF-36 to be 22.7% lower than the Mental Component Summary (44.21±20.79 versus 54.19±20.47; p <0.001) [17].

Our study did not reveal any effect of the disease duration on the AS patients’ life quality. No SF-36 sub-scale had any associative connection to the disease duration, according to W. Hamdi et al. (2012) [18]. However, H. Bodur et al.

| Life quality index | Patients with a preserved BMD status (Z: 0.45±0.2 conventional units; n=42) | Patients with osteopenia (Z: -1.4±0.04 conventional units; n=31) | Patients with osteoporosis (Z: -2.7±0.1 conventional units; n=32) |
|-------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| SF-36 categories  |                                    |                                    |                                    |
| PF                | 60.0±2.7                                           | 55.0±2.7                                           | 53.5±3.6                                           |
| RP                | 20.8±5.8                                            | 12.1±5.8                                           | 10.2±4.9                                           |
| P                 | 38.8±2.8                                            | 38.6±2.5                                           | 33.6±2.7                                           |
| GH                | 43.4±2.7                                            | 37.3±2.9                                           | 35.8±2.1*                                          |
| VT                | 46.1±2.6                                            | 42.1±2.5                                           | 40.4±1.9                                           |
| SF                | 56.5±3.4                                            | 53.6±2.9                                           | 52.0±3.2                                           |
| RE                | 23.8±6.4                                            | 22.6±7.3                                           | 19.8±6.7                                           |
| MH                | 59.1±2.8                                            | 55.7±2.6                                           | 43.3±2.6                                           |
| PCS               | 40.8±2.7                                            | 35.2±2.3                                           | 35.8±2.2                                           |
| MCS               | 46.4±2.8                                            | 42.2±3.2                                           | 43.1±2.6                                           |
| Overall HAQ index | 0.9±0.1                                             | 0.8±0.1                                             | 0.9±0.1                                             |

Note: PF - Physical Functioning; RP - Role-Physical Functioning; P - Pain; GH - General Health; VT - Vitality; SF - Social Functioning; RE - Role-Emotional Functioning; MH - Mental Health; PCS - Physical Component Summary; MCS - Mental Component Summary; the sign of * indicates the significant differences in comparison with the indices of patients with a preserved BMD status (p<0.05).

| Life quality index | Optimal Vitamin D rate (n=21) | Vitamin D insufficiency (n=25) | Vitamin D deficiency (n=35) |
|-------------------|-------------------------------|-------------------------------|-------------------------------|
| SF-36 categories  |                               |                               |                               |
| PF                | 58.1±3.4                       | 55.6±3.7                       | 51.3±3.4                       |
| RP                | 13.1±7.2                       | 13.0±5.8                       | 10.7±4.8                       |
| P                 | 40.4±4.2                       | 35.9±2.7                       | 35.8±2.1                       |
| GH                | 40.7±2.3                       | 41.5±2.9                       | 37.8±2.5                       |
| VT                | 43.6±2.7                       | 41.2±2.7                       | 40.6±2.0                       |
| SF                | 55.4±4.7                       | 54.5±3.0                       | 46.8±3.0                       |
| RE                | 28.6±10.1                      | 18.7±7.7                       | 17.0±5.3                       |
| MH                | 57.3±4.0                       | 54.7±3.0                       | 47.4±3.1*                      |
| PCS               | 38.1±2.9                       | 36.3±2.3                       | 34.4±1.7                       |
| MCS               | 46.2±4.5                       | 42.3±2.7                       | 38.2±2.2                       |
| Overall HAQ index | 0.8±0.1                        | 0.9±0.1                        | 0.9±0.1                        |

Note: PF - Physical Functioning; RP - Role-Physical Functioning; P - Pain; GH - General Health; VT - Vitality; SF - Social Functioning; RE - Role-Emotional Functioning; MH - Mental Health; PCS - Physical Component Summary; MCS - Mental Component Summary; the sign of * indicates the significant differences in comparison with the indices of patients with an optimal Vitamin D rate (p<0.05).
(2011) demonstrated a significant correlation between the life quality (by the ASQoL) and the AS duration [19].

Similar regularities were established in terms of the patients’ age. For instance, the median index of the Physical Component Summary (PCS) by the SF-36 did not differ across the age groups, and did not correlate with age. However, the median index of the Mental Component Summary (MCS) was significantly worse in the age group >50 years. As to the reference sources, F. Salaffi et al. (2009) proved that the physical and mental components had a veritably similar effect across the age groups [20].

We have demonstrated that the group of patients with a peripheral form of disease tended to have reduced life quality indices compared with those of patients with a central AS form, by the SF-36 (PCS; MCS) and HAQ. Similar results were registered by G. Elolemy et al. (2020): patients with a peripheral form of disease had a worse life quality than those with a central AS form in terms of the physical component [3]. However, W. Hamdi et al. (2012) did not find any associations with a form of disease [18].

It is well-known that a long-lasting GC use resulted in a reduced BMD and osteoporosis development and, further on, promotes an increased fracture risk and compromised life quality. According to our findings, the patients with a high cumulative GC dose (>21.6 g) registered significantly reduced indices of physical and mental components compared with the group of patients with a low cumulative GC dose (< 21.6 g). We have found no indications of the life quality alterations depending on the cumulative GC dose used by the AS patients.

The diminished BMD did not have any veritable effect on the AS patients’ life quality. For instance, with osteoporosis, the significantly compromised life quality indices were registered precisely in terms of the physical

Table 5. The SF-36 and HAQ questionnaire findings depending on the bone turnover markers

| Indices          | Osteocalcin | NTx |
|------------------|-------------|-----|
|                  | Optimal rate (>21.5 ng/mL; n=4) | Low rate (<8.11 ng/mL; n=19) | Optimal rate (>104.5 ng/mL; n=45) | High rate (>131.8 ng/mL; n=22) |
| SF-36 categories | PF 50.0±7.4 54.0±2.7 57.7±4.1 59.4±3.5 | RP 0.0±0.0 14.4±4.7 13.6±7.5 9.7±5.8 | P 34.0±7.3 36.5±2.0 41.9±4.1 35.6±4.4 | GH 43.0±3.1 35.8±2.0 44.7±3.8 41.1±3.1 | VT 47.5±4.3 39.8±1.9 45.0±2.9 39.4±2.2 | SF 62.5±15.3 52.2±2.6 54.5±4.5 47.2±3.4 | RE 25.0±25.0 20.7±6.0 33.3±9.8 16.7±8.2 | MH 61.0±14.2 53.5±2.6 56.7±3.5 53.8±3.7 | PCS 46.4±8.4 35.2±1.8 39.5±4.0 35.5±2.9 | MCS 49.0±13.5 41.6±2.4 47.4±4.5 39.1±3.4 |
| HAQ              | 1.0±0.1     0.9±0.1 0.9±0.1 0.9±0.1 |

Note: PF- Physical Functioning; RP - Role-Physical Functioning; P – Pain; GH- General Health; VT – Vitality; SF - Social Functioning; RE - Role-Emotional Functioning; MH - Mental Health; PCS - Physical Component Summary; MCS - Mental Component Summary.

Table 6. The SF-36 and HAQ questionnaire findings depending on the disease activity by ASDAS, BASDAI and BASFI functional index

| Group               | SF – 36 | HAQ |
|---------------------|---------|-----|
| BASDAI < 4 points (n=30) | 44.7±3.6 49.4±3.2 | 0.8±0.1 |
| BASDAI > 4 points (n=75) | 34.3±1.3* 41.7±1.8* | 1.0±0.1* |
| Correlation coefficient, r | -0.38* | -0.30* | 0.29* |
| ASDAS-CRP 2.1-3.5 points (n=48) | 38.3±2.0 | 46.3±2.4 | 0.7±0.1 |
| ASDAS-CRP >3.5 points (n=57) | 36.0±2.1 | 42.4±2.3 | 1.0±0.1* |
| Correlation coefficient, r | -0.20* | -0.16 | 0.27* |
| BASFI < 4 points (n=33) | 40.2±2.6 | 48.8±2.9 | 0.7±0.1 |
| BASFI > 4 points (n=72) | 35.9±1.8 | 41.8±1.9* | 1.0±0.1* |
| Correlation coefficient, r | -0.23* | -0.27* | 0.37* |

Notes: PCS - Physical Component Summary; MCS - Mental Component Summary; the sign of * indicates the significant differences in comparison with the indices of patients with the lowest ASDAS, BASDAI and BASFI values (p<0.05); the sign of + indicates the moderate correlation (r = -0.3 to -0.4); the sign of # indicates the weak correlation (r = -0.2 to -0.3).
We have thus analyzed our own findings and reference data and indicated that the AS male patients register a significant reduction of life quality by the SF-36 indices (PCS; MCS) and HAQ. Those indices did not have any association with the patients’ age (but for the MCS), disease form and duration, structural-functional bone state; however, they seem to worse among the subjects with the Vitamin D deficiency, a high GC dose and disease activity.

Conclusions

The AS male patients register a significant reduction of life quality by the SF-36 indices and HAQ compared with the control group indices. In terms of physical component, the highest differences were revealed for the Pain Intensity index (37.2±1.6 points) and Role-Physical Functioning index (14.0±3.1 points). In terms of scales evaluating the mental component, the worst indicators were found for the Role-Emotional Functioning (RE) (22.2±3.9 points).

The life quality indices did not have any association with the patients’ age, disease duration and AS form, structural-functional bone state and biochemical remodeling markers (Z-scale, osteocalcin, NTx).

Compared with the optimal Vitamin D rate, the group with the Vitamin D deficiency registers a diminished mental index precisely in terms of the Mental Health (MH) sub-scale. There is a clear reverse association corroborated between the life quality and degree of inflammatory activity by the ASDAS and BASDAI, and the GC load.

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Якість життя у хворих на анкілозивний спондиліт чоловіків, зв’язок із перебігом захворювання та структурно-функціональним станом кісткової тканини

Резюме. Актуальність. Численні особливості перебігу анкілозивного спондиліту (АС) негативно впливають на фізичний, психічний і соціальний стан хворих. Не винятком є й система втрати кісткової тканини, що проявляється розвитком остеопорозу та його ускладнення. Однак чіткіх даних щодо впливу остеопорозу та його метаболічних складових, а також особливостей перебігу захворювання на фізичні та психічні компоненти здоров’я у хворих на АС на сьогодні недостатньо. Мета: дослідити показники якості життя за допомогою опитувальників SF-36 та HAQ у чоловіків, хворих на АС, та оцінити їх зв’язок із перебігом захворювання та структурно-функціональним станом кісткової тканини.

Матеріали та методи. Обстежені 105 чоловіків, хворих на АС, та 25 практично здорових осіб відповідного віку та статі, які становили групу контролю. Для оцінки якості життя за допомогою опитувальників SF-36 та HAQ у чоловіків, хворих на АС, та оцінити їх зв’язок із перебігом захворювання та структурно-функціональним станом кісткової тканини.

Результати. Установлено, що у хворих на АС, хворих на АС, вірогідно нижчими є показники якості життя за SF-36 та HAQ у чоловіків, хворих на АС, та оцінити їх зв’язок із перебігом захворювання та структурно-функціональним станом кісткової тканини.

Ключові слова: якість життя; анкілозивний спондиліт; остеопороз.