IMPORTANCE OF POSTURE ASSESSMENT IN ANKYLOSING SPONDYLITIS. PRELIMINARY STUDY

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IMPORTANCE OF POSTURE ASSESSMENT IN ANKYLOSING SPONDYLITIS. PRELIMINARY STUDY (Abstract): **Aim:** The aim of this study is to perform a screening of patients diagnosed with ankylosing spondylitis (AS) in order to evaluate the static spinal disorders and correlate the results with the main clinical and functional parameters that characterize this disease. **Material and methods:** Ninety-five patients diagnosed with AS according to the 1994 New York criteria were screened, and 68 of them (all males) presenting static spinal disorders and on physical therapy programs in different outpatient physical therapy units throughout 2011 entered the study. **Results:** The distribution of the patients according to static spinal disorders was almost even. There were no statistically significant differences in mean age and disease duration (p>0.05). The assessment of lumbosacral pain in the morning (VAS1) and daytime lumbosacral pain (VAS2) showed a higher scores in patients suffering from kyphoscoliosis than in those with scoliosis (p=0.020), (p=0.000), or kyphosis. Ott and modified Schöber index, and chest expansion, had higher mean values in patients with scoliosis compared with the other postural disorders (p<0.001). Statistically higher mean BASFI values were recorded in patients with kyphoscoliosis (p=0.038), while the mean BASMI values were lower in scoliosis patients (p<0.001). As to the quality of life of AS patients, HAQ-DI index recorded significantly lower mean values for kyphoscoliosis compared with other postural disorders (p<0.001). **Conclusions:** Our study suggests that posture assessment and implicitly the correction of possible misalignments should be part of the kinetic physical therapy program. Rigorous observing of postural recommendations can prevent the respiratory system complications. **Key words:** POSTURE, KYPHOSIS, SCOLIOSIS, KYPHOSCOLIOSIS.

Ankylosing spondylitis (AS) is a chronic, progressive inflammatory disease, seriously affecting the musculo-skeletal disorders, especially in younger patients, and causing serious disabilities (1-3). Mobility and deformity are parameters which sometimes evolve independently (4).

Changes in the spine start early in the first 10 years of disease (5), the patient adopting such inappropriate positions as poking head neck, thoracic hyperkyphosis, lumbar lordosis deletion with hip flexion and internal rotation and knee flexion (6). Depending on patient activity, such changes
Importance of posture assessment in ankylosing spondylitis, preliminary study

can cause various degrees of disability, significantly affecting the quality of life (7).

In AS patients posture is often affected early after the onset or as the disease progresses (8-10), and this should be taken into account in the rehabilitation treatment.

A poor body physical structure should be detected, assessed both with respect to its magnitude and consequences, and eventually corrected. Posture, determined by the reports of musculoskeletal components, is the main objective of the assessment. It was believed that a perfect body posture and a good relation between its segments are synonymous with 'physical beauty' (11).

The aim of this study is to perform a screening of patients diagnosed with AS in order to evaluate the static spinal disorders and correlate the results with the main clinical and functional parameters that characterize this disease.

MATERIAL AND METHODS

Ninety-five patients with AS were screened (New York criteria, modified for AS), of which only 68 male patients which followed outpatient physiokinetic treatment in various medical rehabilitation units in Iasi town in 2011 entered the study. Study exclusion criteria were: patients presenting sindesmofites in the cervical-dorsolumbar spine, were under biologic drug treatment, and presented other conditions with axial involvement (Scheuermann disease, sacroiliac osteochondrosis, spinal stenosis, herniated discs, and congenital abnormalities)

Patients were assessed according to a standard protocol that included: (i) general data (age, disease duration), (ii) clinical and functional parameters (visual analogue scale for morning lumbosacral pain (VAS1) and daytime lumbosacrate pain (VAS2), Bath Ankylosing Spondylitis Functional Index (BASFI), Bath Ankylosing Spondylitis Metrology Index (BASMI), Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), values recorded on a scale of 0-10 (0 -normal, 10 -severe); lumbar spine mobility (Schöber’s modified test and finger-to-floor distance (FFD), dorsal spine mobility (Ott index), thoracic spine flexibility (chest expansion) and quality of life Health Assessment Questionnaire (HAQ-DI, score that ranges from 0 -impossible and 30 -normal); (iii) static spinal disorders assessed by "lead wire" test and anthropometric data (Table I).

For statistical analysis we used SPSS 13.0 software. Descriptive data were presented as mean ± standard deviation (SD). Distribution of all variables was assessed using the nonparametric Kolmogorov-Smirnov test. Student t-test and χ² test (chi-square) were used to assess homogeneity of subgroups of patients with vertebral static disorder. A p<0.05 value was considered statistically significant.

RESULTS

Patient distribution in relation to static spinal disorders was almost even. Patients with AS, were aged between 18 and 31 years; mean age 24.32 ± 3.36 years. In relation to the type of static spinal disorders, patients mean age did not differ significantly (p=0.417), the same being true for disease duration (p=0.913) (tab. I, fig. 1).

Morning lumbosacral pain (VAS1) and daytime lumbosacral pain assessment (VAS2) gave significantly higher scores in patients with kyphoscoliosis than in those with scoliosis (p=0.020) or kyphosis (p=0.000).

As to FFD and BASDAI indices, no significant differences between the types of spinal disorders were found (p=0.108), (p=0.069) respectively.
TABLE I
Demographic, clinical, functional, and quality of life data in AS patients

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean ± SD</th>
<th>Lowest</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>24.32 ± 3.36</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>Disease duration (years)</td>
<td>4.79 ± 2.70</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>VAS1 (range 0-10)</td>
<td>3.91 ± 1.218</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>VAS2 (range 0-10)</td>
<td>2.66 ± 1.087</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>BASFI (range 0-10)</td>
<td>3.37 ± 1.97</td>
<td>0.4</td>
<td>6</td>
</tr>
<tr>
<td>BASMI (range 0-10)</td>
<td>3.49 ± 723</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>BASDAI (range 0-10)</td>
<td>5.22 ± 1.95</td>
<td>2.1</td>
<td>7.6</td>
</tr>
<tr>
<td>Ott index (cm)</td>
<td>2.52 ± 1.167</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Modified Schöber (cm)</td>
<td>2.46 ± 85</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>FFD (cm)</td>
<td>-17.24 ± 9.841</td>
<td>-33</td>
<td>-5</td>
</tr>
<tr>
<td>Chest expansion (cm)</td>
<td>2.56 ± 79</td>
<td>1.5</td>
<td>5</td>
</tr>
<tr>
<td>HAQ-DI (range 0-30)</td>
<td>25.88 ± 2.20</td>
<td>23</td>
<td>29</td>
</tr>
</tbody>
</table>

Spinal mobility, assessed by Ott and modified Schöber indices, and chest expansion index showed higher mean values in patients with scoliosis compared with other types of vertebral static disturbance (p<0.001).

The functional BASFI index had significantly higher mean values in patients with kyphoscoliosis as compared with those with scoliosis or kyphosis (p=0.038), and mean BASMI was significantly lower in patients with scoliosis (p<0.001).

As to the quality of life of AS patients, HAQ-DI index had significantly lower mean values in patients with kyphoscoliosis as compared with the other types of static spinal disorders (p<0.001) (tab. II).

TABLE II
Correlation between vertebral static disorders and clinical and functional parameters in AS patients

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Kyphosis (mean ±DS)</th>
<th>Scoliosis (mean ±DS)</th>
<th>Kyphoscoliosis (mean ±DS)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS2</td>
<td>1.74 ± 810</td>
<td>2.64 ± 658</td>
<td>3.61 ± 839</td>
<td>0.000</td>
</tr>
<tr>
<td>BASFI</td>
<td>3.12 ± 2.12</td>
<td>2.78 ± 1.87</td>
<td>4.20 ± 1.69</td>
<td>0.038</td>
</tr>
<tr>
<td>BASMI</td>
<td>3.91 ± 288</td>
<td>2.59 ± 503</td>
<td>3.91 ± 288</td>
<td>0.000</td>
</tr>
<tr>
<td>BASDAI</td>
<td>4.83 ± 2.06</td>
<td>4.82 ± 1.93</td>
<td>5.98 ± 1.69</td>
<td>0.069</td>
</tr>
<tr>
<td>Ott index</td>
<td>2.00 ± 71</td>
<td>3.82 ± 91</td>
<td>1.80 ± 60</td>
<td>0.000</td>
</tr>
<tr>
<td>Modified Schöber</td>
<td>2.74 ± 58</td>
<td>3.00 ± 79</td>
<td>1.70 ± 56</td>
<td>0.000</td>
</tr>
<tr>
<td>FFD</td>
<td>-15.65 ± 9.890</td>
<td>-15.23 ± 8.530</td>
<td>-20.74 ± 11.128</td>
<td>0.108</td>
</tr>
<tr>
<td>Chest expansion</td>
<td>2.22 ± 56</td>
<td>3.20 ± 77</td>
<td>2.24 ± 60</td>
<td>0.000</td>
</tr>
<tr>
<td>HAQ-DI</td>
<td>26.39 ± 2.105</td>
<td>26.86 ± 2.054</td>
<td>24.43 ± 1.727</td>
<td>0.000</td>
</tr>
</tbody>
</table>
DISCUSSION
In this study, posture assessment revealed what are the onset static spinal disorders (preankylosing spondilitis), which, with disease progression, lead to severe clinical outcomes that aggravate the disease-generated general dysfunctional process (12).

The main feature of AS is its progression to ankylosis by the replacement of inflammation with bone formation (13). Given this, the unbalanced use of muscles, ligaments and joint will faster lead to poor posture by the inflammation of overused tissues (4).

It is known that the treatment of AS substantially contributes to preventing postural deformities (14, 15). In AS, pain and stiffness are symptoms are inflammation-related that can last as long as 10 years (5). In our study, the patients with kyphoscoliosis experienced more pain (VAS1 and VAS2).

One characteristic of AS is the loss of spinal mobility and less frequently of peripheral joint mobility (5). In this study the patients were thus selected as to allow differentiation of spinal mobility according to the spinal static disorders. Thus, modified Schöber index showed higher mean values in patients with scoliosis as compared to those with kyphosis and kyphoscoliosis, demonstrating the fact that first it is noticed the disappearance of physiologic lumbar lordosis (by reduced mobility of the lumbar spine) and then kyphotic deformation (4).

Chest impairment in AS is due to changes in the spine and inflammatory process in small joints of the rib cage (thoracodynia) (4). Thus, in our study the lowest Ott index values, and implicitly a lower chest expansion, were found in patients with kyphosis and kyphoscoliosis with repercussions on the quality of life (HAQ-DI), especially in the patients presenting kyphoscoliosis.

BASDAI index was accepted as a standard tool for assessing disease activity in recent years (16, 17). In our assessments, no significant differences in BASDAI score between the different types of spinal disorders were recorded (p=0.069). However, this supports the suggestion that poor posture in AS equally affects the clinical disease activity in the different types of static spinal disorders.

Some aspects of functional capacity are often affected in patients with AS (18, 19). In our study, BASFI had significantly higher mean values in patients with kyphoscoliosis than in patients with scoliosis or kyphosis (p=0.038), BASMI showed significantly lower mean values in patients with scoliosis (p<0.001).

CONCLUSIONS
Posture assessment as part of the initial or check-up consultation of AS patient revealed a tendency towards antalgic or inadequate postures. This has allowed us a better understanding of the clinical and functional aspects of the patient with onset AS.

Based on these results, our study suggests that posture assessment and implicitly the correction of possible misalignments should be part of the kinetic physical therapy program. Rigorous observing of postural recommendations can prevent the respiratory system complications.
REFERENCES


