Cognitive Impairment and Employment Status in Patients with Multiple Sclerosis

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Background

Cognitive impairment in patients with multiple sclerosis (MS) may seriously compromise their working ability. This impairment may interact with the patients' neurological impairment as reflected by the EDSS.

In a group of MS outpatients, we assessed neurological and cognitive impairments and examined their relationship to working status.

Patients

The study was conducted in 64 patients (45 women, 19 men) at ages between 23 and 63 years (mean ± SD: 39.6 ± 9.9 years). The EDSS score was between 0 and 6.0 (mean ± SD: 2.71 ± 1.45). MS type was relapsing-remitting in 56 (87.5 %) of the patients, secondary progressive in 4 (6.3 %), primary progressive in 2 (3.1 %) and clinically isolated syndrome in 2 (3.1 %). 42 (65.6 %) of the patients were working in the first labor market, 27 of them (42.2 % of all patients) with 30 or more weekly working hours; 18 (28.1 %) were retired, 3 (4.7 %) were unemployed and 1 (1.6 %) was employed within a state intervention to increase employment.

The latter 4 patients will not be considered in the following.

Methods

The assessments were carried out in out-patients with MS at a number of neurological practices. MS diagnoses were made according to revised McDonald criteria (Polman et al 2011). The age of the patients was between 18 and 65 years; they should have completed their school education and should not be retired for another reason than disease.

The severity of neurological symptoms was evaluated by means of the EDSS. Cognitive performance was assessed by means of the computer-based Memory and Attention Test (MAT).

Differences in EDSS and MAT between patient groups

The patients employed in the first labor market (n=42) were younger than the patients in retirement (n=18). They had a lower EDSS score and a better cognitive performance, mainly in episodic short-term memory:

<table>
<thead>
<tr>
<th></th>
<th>patients employed in the first labor market (n=42)</th>
<th>patients in retirement (n=18)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>36.2 ± 8.3</td>
<td>43.7 ± 7.3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>EDSS</td>
<td>2.37 ± 1.13</td>
<td>3.78 ± 1.10</td>
<td>&lt;0.01</td>
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<tr>
<td>MAT scores for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- global memory</td>
<td>61.2 ± 13.0</td>
<td>44.8 ± 14.9</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>- episodic short-term memory</td>
<td>13.7 ± 3.4</td>
<td>6.9 ± 3.1</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>- episodic working memory</td>
<td>11.7 ± 4.5</td>
<td>10.3 ± 5.4</td>
<td>n.s.</td>
</tr>
<tr>
<td>- selective attention (level 3)</td>
<td>11.3 ± 4.3</td>
<td>9.5 ± 4.4</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Age, EDSS and MAT scores are given as means ± SD for both patients groups. P-values were calculated by means of unpaired Student’s t-tests. If p-values were greater than 0.05, “n.s.” (not significant) is indicated.

No significant differences were found between the patients working 30 hours or more per week and those working less than 30 hours weekly.

Prediction of working status

To assess the predictive value of EDSS and episodic short-term memory for working status, binary logistic regression analyses were applied. EDSS correctly classified 38 of 42 persons in work (90.5 %) and 10 of 18 persons in retirement (55.6 %), at a cut off of 3.5/4.0. MAT episodic short-term memory score correctly classified 35 of 42 persons in work (83.3 %) and 15 of 18 persons in retirement (83.3 %), at a cut off of 5/6 points. Both parameters together correctly classified 57 of 60 patients (95 %).

Conclusion

EDSS scores of less than 4.0 are highly characteristic for patients employed in the first labor market. MAT episodic short-term memory scores of less than 6 are typical for patients with early retirement due to health restrictions. Both parameters together have a high predictive value for the working status of MS patients.

Disclosure

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The MAT is property of Dynamikos GmbH Mannheim.

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