Is Diabetes a Protective Factor in ALS?

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Introduction

- Few factors are known to affect the disease course of ALS
- Identifying factors that alter the course of these degenerative disorders should give a clue as to the pathophysiology underlying them
- Glucose and insulin dysregulation have been suggested
- Premorbid dysfunction has not been examined for effect on course of ALS

Methods

- 2397 consecutive ALS-FTD patients were examined at the time of their initial evaluation for ALS-FTD
- All patients diagnosed with probable or definite ALS-FTD (El Escorial criteria) and tested for diabetes mellitus (DM)

Demographics

- The majority of patients were male (61.9%), Caucasian (88.8%) and right-handed (93.3%)
- Familial ALS occurred in 8.4% of patients
- Bulbar onset patients had shorter length of disease ($p < 0.01$)
- Female patients had shorter length of disease ($p < 0.01$)
- Female patients had bulbar onset more often ($p < 0.01$)

Results

Table 1 Cohort Characterization

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at First Symptom</td>
<td>652</td>
<td>53.3</td>
<td>12.9</td>
</tr>
<tr>
<td>Age at Diagnosis</td>
<td>652</td>
<td>54.6</td>
<td>12.9</td>
</tr>
<tr>
<td>Months Into Disease</td>
<td>651</td>
<td>16.0</td>
<td>13.5</td>
</tr>
<tr>
<td>Rate of Progression</td>
<td>652</td>
<td>3.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Length of Disease</td>
<td>892</td>
<td>3.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Education (yrs)</td>
<td>524</td>
<td>13.8</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Figure 1 Age of Onset and DM

ALS patients with DM had a six year later age of onset, $p = 0.002$

Figure 2 IQ and DM

DM did not affect:
- Length of disease or rate of progression on the Appel Scale
- Frequency of gender or site of onset

Conclusions

- ALS diabetics had a 6 year later age of onset
- ALS diabetics did not have a faster rate of progression or shorter duration of disease as would be expected
- ALS diabetics had lower verbal IQ scores
- Does DM have an overall protective or detrimental effect in ALS?