Identifying factors that alter the course of degenerative disorders should give a clue as to the pathophysiology underlying them.

Few factors are known to affect the course of amyotrophic lateral sclerosis (ALS). Glucose and insulin dysregulation have been suggested. However, premorbid dysfunction has not been examined for its effect on the presentation and course of ALS.

### Introduction

Diabetes Mellitus: Risk or Protective Factor in ALS?

Alicia R Salamone, Michael W Wheaton, Emily J McDowell, Adriana M Strutt and Paul E Schulz

Center for Neurodegenerative Disorders, Department of Neurology, Baylor College of Medicine, Houston, TX

Between 1977 and 2006, 2372 consecutive patients were examined at the time of their initial evaluation for ALS. All patients diagnosed with probable or definite ALS (El Escorial criteria) were included. All were tested for diabetes mellitus (DM). Charts were retrospectively reviewed for disease variables.

### Methods

Between 1977 and 2006, 2372 consecutive patients were examined at the time of their initial evaluation for ALS. All patients diagnosed with probable or definite ALS (El Escorial criteria) were included. All were tested for diabetes mellitus (DM). Charts were retrospectively reviewed for disease variables.

### Results

**Diabetes Mellitus: Risk or Protective Factor in ALS?**

Alicia R Salamone, Michael W Wheaton, Emily J McDowell, Adriana M Strutt and Paul E Schulz

Center for Neurodegenerative Disorders, Department of Neurology, Baylor College of Medicine, Houston, TX

Between 1977 and 2006, 2372 consecutive patients were examined at the time of their initial evaluation for ALS. All patients diagnosed with probable or definite ALS (El Escorial criteria) were included. All were tested for diabetes mellitus (DM). Charts were retrospectively reviewed for disease variables.

### Tables 1 and 2. Demographics

<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>2359</td>
<td>55.6</td>
<td>13.3</td>
</tr>
<tr>
<td>Rate of Progression</td>
<td>651</td>
<td>3.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Length of Disease (yrs)</td>
<td>891</td>
<td>3.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Education (years)</td>
<td>523</td>
<td>13.8</td>
<td>3.2</td>
</tr>
</tbody>
</table>

**Tables 3. Presence of DM is associated with increased severity of cognitive impairment ($p<0.001$)**

<table>
<thead>
<tr>
<th>Cognitive Status by FAS Score</th>
<th>Percentage with DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild ($-3 &lt; Z &lt; -1$, N=183)</td>
<td>5.5%</td>
</tr>
<tr>
<td>Moderate ($-3 &lt; Z &lt; -2$, N=50)</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

**Figure 1. DM is less frequent in the ALS cohort than in age and location-matched controls.**

**Figure 2. ALS-DM patients have a 4 year later age of onset than do ALS-No DM patients (60.3 vs 56.3).**

**Figure 3. Rate of progression and length of disease of ALS were similar between ALS-DM and ALS-No DM.**

**Figure 5. ALS-DM patients scored worse on executive function and attention.**

**Figure 6. ALS-DM patients were more depressed.**

### Conclusions

**Motor**
- ALS-DM pts had a 4 year later age of onset for motor symptoms, but did not have a faster progression rate or shorter duration of disease as would be expected.

**Cognitive**
- ALS-DM pts had worse cognition and depression than non-DM pts
- The pattern of cognitive impairment may differ between DM and non-DM pts with DM pts having greater problems with memory, confrontation naming, verbal fluency, and depression. It is not clear, then, whether DM worsens FTD or causes a different kind of cognitive impairment.

**To conclude,** DM delays the onset of motor symptoms, but is associated with worse cognitive findings.