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

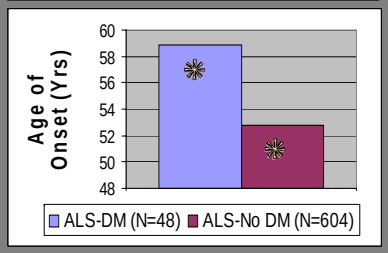
- The majority of patients were male (61.9%), Caucasian (88.8%) and right-handed (93.3%)
- Familial ALS occurred in 8.4% of patients
- Bulbar onset patients had shorter length of disease ($p < 0.01$)
- Female patients had shorter length of disease ($p < 0.01$)
- Female patients had bulbar onset more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

Results

Table 1 Cohort Characterization

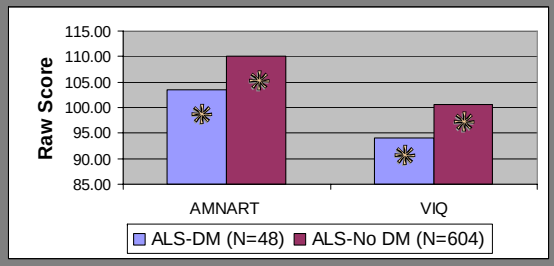
	N	Mean	Std. Deviation
Age at First Symptom	652	53.3	12.9
Age at Diagnosis	652	54.6	12.9
Months Into Disease	651	16.0	13.5
Rate of Progression (Appel Scale)	652	3.1	2.9
Length of Disease (yrs)	892	3.2	2.3
Education (years)	524	13.8	3.2

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



- Als patients with DM had lower pre-morbid and current verbal IQ scores, $p = 0.003$ and $p = 0.02$

- 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?