ApoE genotype
in Amyotrophic Lateral Sclerosis

INTRODUCTION

APOE genotype is known to reduce the age of onset for Alzheimer’s disease and is associated with alterations in the clinical course of many other neurodegenerative conditions. Previous studies which investigated the effect of selective APOE genotypes on disease course of Amyotrophic Lateral Sclerosis (ALS) have lead to variable results.

METHODS

- 862 patients recruited from the Baylor College of Medicine MDA/ALS Outpatient Clinic
- Diagnosis of probable/definite ALS (El Escorial criteria)
- Measured motor disease variables included age at onset, rate of disease progression according to Appel ALS scale and disease duration.
- The patients' cognitive abilities were evaluated through a comprehensive neuropsychological battery. Measures included the American version of the National Adult Reading Test (AMNART); modified (Satz-Mogel) version of the Wechsler Adult Intelligence Scale Revised (WAIS-R); Stroop Color and Word Test; Verbal Series Attention Test (VSAT); Logical Memory (LM) and Visual Reproduction (VR) subtests from the Wechsler Memory Scale–Revised (WMS-R); Symbol Digit Modalities Test (SDMT), Rey Auditory Verbal Learning Test (RAVLT), Rey Ostrich Complex Figure Test (Rey O Complex), lexical fluency (COWA-FAS), semantic fluency (Animals) and Trail Making Test, parts A & B.

- APOE genotype was determined using standard testing of venous blood. Participants who had genotypes ApoE2/2 and ApoE2/3 were classified as ApoE2 carriers; those with genotypes ApoE3/4 and ApoE4/4 were classified as ApoE4 carriers. In addition, those with ApoE3/3 were classified as ApoE3 carriers. ApoE2/4 were excluded due to their small number (n=10).

RESULTS

- The distribution and frequencies of APOE genotypes in ALS patients were the same as in controls.
- No significant difference between groups on Kruskal-Wallis test.

CONCLUSIONS

- APOE genotype distribution does not differ between ALS and control groups suggesting that genotype does not alter the risk of having ALS.
- APOE genotype does not associate with the age of onset, rate of motor disease progression or disease duration in ALS.
- APOE4 genotype is associated with lower performance on some neuropsychological measures of intelligence.