G41S SOD1 RECURRENT MUTATION IN A LARGE POLISH ALS FAMILY

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Introduction: Mutations in SOD1 were linked to familial and sporadic amyotrophic lateral sclerosis (ALS) cases in numerous populations. Mutation G41S connected with a rapidly progressive ALS has been identified previously in five Italian ALS families, sharing a common ancestor.

Aims: To detect molecular basis of ALS in a large Polish ALS family.

Methods: Standard procedures to analyze nucleotide sequence of SOD1 in four members of the family (two symptomatic and two healthy in two generations) were performed. Eight STR markers flanking SOD1 were also identified. The results were normalized and compared to previously published data.

Results: We present a large Polish family with rapid progressive form of ALS, due to G41S mutation, which shares no ancestry with previously described Italian patients. The sequencing of SOD1 revealed the G41S mutation in three members of the family (two affected and one healthy). The age of onset ranged from 40 to 50 years (mean 45 y.), and the mean time from onset of symptoms to death was 20 months (range 16-24 months). The 70 years old mother of affected proband is healthy, although she is a carrier of G41S mutation. Polymorphic STR markers analyses revealed substantially different haplotype of the Polish SOD1 locus, as compared to the Italian one.

Conclusions: We confirmed that G41S mutation is associated with a severe ALS phenotype. Genetic analyses revealed that the mutation is recurrent one, resulting from an independent mutation.