

TRAUMA AND RISK OF AMYOTROPHIC LATERAL SCLEROSIS

Ettore Beghi (a), Elisabetta Pupillo (a), Giancarlo Logroscino (b), and Adriano Chiò (c)
for the EURALS Consortium

(a) *Laboratorio di Malattie Neurologiche, Istituto Mario Negri, Milano*

(b) *Clinical Neurologica, Università di Bari*

(c) *Clinica Neurologica, Univeristà di Torino*

Although the association between Amyotrophic Lateral Sclerosis (ALS) and trauma has been repeatedly emphasized, the results of published reports are controversial.

A population-based case-control study has been undertaken in Italy to assess this association in a large representative cohort. The research hypothesis was whether or not patients with ALS are at increased risk of trauma, repeated trauma, or severe trauma than the general population. Cases were patients with newly diagnosed ALS from three population-based registries (Piedmont, Lombardy, Puglia; total population at risk 13,266,799). For each case two age and sex-matched hospital controls were selected, one with a neurological (non degenerative) disease and one with a non-neurological (other than orthopedic) disease. Only traumatic events occurred before the onset of symptoms were recorded. The sample was to include 400 cases and 800 controls under the assumption that 1% of controls report at least a traumatic event requiring hospitalization and that this percentage in patients with ALS is increased to 3.9% (Odds Ratio 4) with a 5% level of significance and an 80% power.

Until July 2009, the study population included 329 cases, 228 neurological controls and 216 non-neurological controls. One of more traumatic events were reported by 187 cases (56.8%) and 209 controls (47.1%) (odds ratio, OR 1.5; 95% confidence interval, CI 1.1-2.0) . The OR was 1.6 (95% CI 1.2-2.1) for mild to moderate traumatic events, and 2.0 (95% CI 1.0-3.9) for severe traumatic events (chi-square for trend 3.7; p=0.05). Compared to controls, patients with ALS also had a higher chance to report three or more traumatic events (OR 2.4; 95% CI 1.3-4.6).

Antecedent trauma, repeated trauma, and severe trauma may be risk factors for ALS.