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Progesterone and cortisol levels in sporadic amyotrophic lateral sclerosis (sALS): correlation with prognostic factors

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Abstract

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disorder. Worse prognostic factors in ALS are: (a) advanced age, (b) bulbar onset, and (c) short time between onset and diagnosis. Progesterone (PROG) has been associated with neuroprotective and promyelinating activities in injury, ischemia and degeneration of the central and peripheral nervous system. Cortisol is connected to the response to stress situations and could contribute to neuronal damage. The goals of this study were: (i) to investigate whether PROG levels are modified by ALS prognostic factors and (ii) to determine whether cortisol follows the same pattern. We determined serum steroid levels in 27 patients with sporadic ALS (sALS) and 21 controls. Both steroid hormones showed significantly increased levels in ALS patients versus controls (mean±SEM: PROG ALS vs.

Control: 0.54±0.05 vs. 0.39±0.04 ng/mL, p<0.05; cortisol ALS vs.

Control: 17.02±1.60 vs. 11.83±1.38 µg/dL, p<0.05).1 A trend towards higher levels of PROG were demonstrated in spinal onset patients compared with bulbar onset (p=0.07), positive correlation with survival time (RRho=0.43, p=0.04) and a trend towards significance with time to diagnosis (RRho=0.36, p=0.06). These correlations have not been demonstrated for cortisol. Elevated serum steroid levels in sALS were probably due to hyperfunction of the hypothalamic-pituitary-adrenal axis. However, only PROG correlated with better prognostic factors. Future studies will determine if the different behavior of PROG and cortisol relate to any particular role they might play during the course of this motor neuron degenerative disease.

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