

ASSESSMENT OF HUMAN MOTONEURON AFTERHYPERPOLARIZATION DURATION IN HEALTH AND DISEASE

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Abstract

The results of the investigation of afterhyperpolarization (AHP) duration in normal aging and selected neuromuscular disorders are presented. This investigation yielded unexpected results: the AHP shortening in myogenic disease (DMD) and no significant difference from control values in neurogenic disease (ALS). However, introduction of age factor revealed novel aspects of the human ALS, which can be interpreted on the basis of the results obtained in a SOD1 mice, thus confirming usefulness of this animal model of ALS. In spastic patients the AHP was prolonged and the difference from the control AHP duration decreased with age and disease duration. Our results suggest that the match between temporal characteristics of the AHP of MN and of the twitch of its muscle unit is preserved during normal aging and in spasticity, but not in the DMD.

Keywords: human motoneurone, afterhyperpolarization, aging, duchenne muscular dystrophy, amyotrophic lateral sclerosis, post-stroke spasticity