BIOCHEMICAL CHANGES IN DORSAL MOTOR NUCLEUS OF VAGUS IN RAT MODEL OF SPORADIC ALZHEIMER'S DISEASE

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Neuropathological changes in sporadic Alzheimer's disease (sAD) emerge in brain stem sooner than in supratentorial brain regions. In context of new evidence suggestive of relationship between sAD, insulin resistant brain state and neuroinflammation, dorsal motor nucleus of vagus (DMNX) - important part of the dorsal vagal complex, an integrative center of metabolic and immune homeostasis, emerges as interesting potential pathophysiological factor in development of sAD. Immunofluorescent analysis of cellular activity, insulin signaling, autophagy and inflammation was analyzed in DMNX of sAD model after acute intracerebroventricular STZ injection (STZ-icv). Chronic changes in DMNX insulin signaling, mTOR pathway and glucose transporters were evaluated by immunofluorescence and western blot. Oxidative stress in whole brain stem lyzate was evaluated by measurement of catalase activity, reduced glutathion and lipid peroxidation. Relevance of observed metabolic and oxidative changes was examined in model of acute peroral D-galactose treatment currently investigated as a potential therapy for sAD, and inraperitoneal D-galactose administration used as an animal model of accelerated aging.

Keywords: Brain stem, Alzheimer's disease, vagus, metabolism, oxidative stress