

P-451 - CHANGES OF CELLULAR RESPIRATION IN PATIENTS WITH ALZHEIMER'S DISEASE

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Introduction: Alzheimer's disease (AD) is the most frequent neurodegenerative disease, characterized by progressive decline in variety of higher brain functions - memory, orientation, and thinking. According to increasing evidences, mitochondrial insufficiencies contribute to pathology of AD; changes were described in AD brains, blood cells and human fibroblasts.

Objectives: On molecular level, oxygen and glucose metabolism is altered and energy metabolism is impaired. Mitochondrial abnormalities and alterations in mitochondrial enzymes, especially complex I and cytochrome c oxidase, were observed. However, the cause and important aspects of AD mechanism have not yet been sufficiently clarified.

Aims: The aim of our study was to find whether kinetics of oxygen consumption is modified in AD patients. Further, we afford to suggest parameters that could be suitable as AD markers.

Methods: AD patients and healthy control group were included in the study. Respiratory rate of mitochondria, as measure of total activity of the system of oxidative phosphorylation (OXPHOS), was measured in mitochondria using oxygraph with Clark-type electrodes. High resolution respirometry was performed in intact as well as in permeabilized platelets.

Results: Our results indicate significantly lower respiratory rate in intact platelets as well as lower respiratory capacity of electron transfer system in patients with AD compared to controls.

Conclusions: We propose that decrease in oxygen consumption may participate in pathophysiology of AD, and respiratory rate in platelets could be AD marker.

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