

MORPHOLOGICAL AND MORPHOMETRIC ALTERATIONS OF REIL INSULA IN ALZHEIMER'S DISEASE

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Introduction: In humans, insular cortex is a highly developed structure totally encased within the brain at the depths of the Sylvian fissure and covered by frontal, fronto-parietal and temporal opercula. It is divided by a central sulcus into a larger anterior portion and a smaller posterior portion. Insular lobe has connections with cerebral cortex, basal ganglia, amygdaloid body, thalamus and other limbic areas. It is involved in the perception of effort during exercise and plays an important role in emotions, feelings and addiction.

Objectives: The main purpose of this study is to reveal the neuropathological changes that take place at the level of dendrites and spines of pyramidal neurons in insular cortex of normal aging and Alzheimer's disease brains.

Materials and methods: The morphological study is based on examination of eight normal aging brains and two brains from individuals who suffered from Alzheimer's disease, using Golgi silver staining method.

Results and Conclusions: Application of silver impregnation technique revealed marked alterations in cell somata, in dendrites of pyramidal neurons as well as in the formation and structure of spines. From morphometric study demonstrated a significant reduction in total dendritic length per neuron reaches 45%, a reduction of the final dendritic branches by 55% and reduces the number of spines by approximately 50% in Alzheimer's disease.

Thus the morphological and morphometric study pleads in that insular cortex plays a crucial role in the autonomic related disorders that are present in the majority of patients suffer from Alzheimer's disease.