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Sommario/riassunto

This e-book focuses primarily on the role of the fornix as a functional, prognostic, and diagnostic marker of Alzheimer's disease (AD), and the application of such a marker in clinical practice. Researchers have long been focused on the cortical pathology of AD, since the most important pathologic features are the senile plaques found in the cortex, and the neurofibrillary tangles and neuronal loss that start from the entorhinal cortex and the hippocampus. In addition to gray matter structures, histopathological studies indicate that the white matter is also altered in AD. The fornix is a white matter bundle that constitutes a core element of the limbic circuits, and is one of the most important anatomical structures related to memory. The fornices originate from the bilateral hippocampi, merge at the midline of the brain, again divide into the left and right side, and then into the precommissural and the postcommissural fibers, and terminate at the septal nuclei, nucleus accumbens (precommissural fornix), and hypothalamus (postcommissural fornix). These functional and anatomical features of the fornix have naturally captured researchers' attention as possible diagnostic and prognostic markers of AD. Growing evidence indicates that the alterations seen in the fornix are potentially a good marker with which to predict future conversion from mild cognitive impairment to AD, and even from a cognitively normal state to AD. The degree of alteration is correlated with the degree of memory impairment, indicating the potential for the use of the fornix as a functional marker.

Moreover, there have been attempts to stimulate the fornix to recover the cognitive function lost with AD. Our goal is to provide information about the status of current research and to facilitate further scientific and clinical advancement in this topic.