ANATOMO-CLINICAL CORRELATION STUDY IN ALZHEIMER'S DISEASE (Abstract)*. **THESIS. SÃO PAULO, 1996.**

*PAULO CARAMELLI***

Background. There is a major debate in Alzheimer's disease (AD) research about the role of neurofibrillary tangles (NFT) and senile plaques (SP), as well as their main molecular counterparts - tau and beta amyloid proteins - in the pathogenesis of the disease. In this sense, anatomo-clinical studies are of special interest, since they can ultimately determine which neuropathological lesion is more closely related to the cognitive deficits found in the disease. However, most anatomo-clinical correlative studies in AD have been essentially limited to correlate neuropathological data with severity of dementia. Very few investigations have addressed the correlations between the distribution of lesions and the profiles of cognitive impairment. This is partly due to the limitation imposed by the usually long interval between the last neuropsychological evaluation and death.

Objective. To correlate the cerebral distribution of NFT and SP densities in patients with AD with comprehensive neuropsychological data obtained within one year before death.

Material / Methods. Ten patients (eight female) with post-mortem diagnosis of AD, aged at death between 70 and 93 years (mean $= 80.4 \pm 6.6$) and with mean duration of symptoms of 5.6 ± 2.9 years, were selected for the study. All patients were submitted to at least one neuropsychological testing within one year before death (mean interval $= 4.7 \pm 3.5$ months). Neuropsychological evaluation included 17 tests assessing six cognitive domains: memory, language, visuo-perceptual, visuo-spatial and constructional abilities, and limb praxis. Neuropathological study was performed with modified Bielschowsky technique. Mean densities of SP and of NFT were determined in the hippocampal formation (CA1 area, subiculum and parasubiculum) and in six neocortical areas (midfrontal, orbitofrontal, cingulum, fusiform gyrus-T4, superior and inferior parietal cortices). Statistical correlations between scores in the six cognitive areas and SP and NFT densities were determined through the Spearman rank correlation test.

Results. For NFT, significant correlations emerged only between tangle density in CA1 of the hippocampus and visuo-perceptual scores. On the other hand, for SP density values, significant corelations were found between visuo-perceptual tests and lesions in the subiculum and in the fusiform gyrus, between language scores and plaques in the superior parietal cortex, and between visuo-spatial deficits and lesions in the superior parietal cortex and in the fusiform gyrus.

Conclusion. SP in specific brain areas displayed a good correlation with the profiles of cognitive impairment in this selected group of AD patients. The association of fusiform gyrus and of superior parietal lobule involvement with visuo-perceptual and visuo-spatial deficits, respectively, is in agreement with the current knowledge about the anatomical basis of visual processing. Moreover, these overall results suggest that SP play a relevant role in the clinical expression of dementia in AD.

KEY WORDS: **Alzheimer's disease, dementia, neuropsychological evaluation, neurofibrillary tangles, senile plaques.**