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Clinical diagnosis of vascular and mixed dementia: is it valid?

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Dementia due to atherosclerosis was described over a hundred years ago. The concept has since evolved to include multiple physiopathological mechanisms related to deficiencies in cerebral blood supply prompting the use of the broader term vascular dementia (VaD). We have performed clinicopathological correlations in 208 individuals to evaluate five currently used clinical criteria for VaD. We have shown that they are not interchangeable; although they are relatively specific, most suffer from low sensitivity. Differential diagnosis is further complicated by the frequent occurrence of mixed dementia (MD), the coexistence of both VaD and Alzheimer's disease (AD). Several studies have demonstrated the influence of macroscopic vascular lesions on the clinical expression of AD thus providing support for including these lesions in establishing the neuropathological diagnosis of MD. However, the clinical significance of isolated microscopic ischemic lesions, which are frequently observed in elderly cohorts, remains obscure. To address this issue, we developed microvascular scores based on semi-quantitative assessments of demyelination, cortical and white matter gliosis, and microvascular infarcts in the anterior hippocampus, inferior temporal cortex, frontal cortex and parietal cortex bilaterally. We applied these scores to 45 consecutive autopsied dementia cases with Braak stages of II or less. Total microinfarct and demyelination scores explained 36% and 11% respectively of the variability in cognitive function as measured by the clinical dementia rating scale (CDR). Gliosis scores did not predict CDR stage. These results suggest that neuropathological criteria for MD should include semi-quantitative assessments of microscopic ischemic pathology which should take into account demyelination and cortical microinfarcts. Information obtained from clinicopathological correlations can provide crucial information for the development of better performing neuropathological and clinical criteria for both MD and VaD.