

Brain volume changes in Alzheimer's disease patients treated with a cholinesterase inhibitor plus the cholinergic precursor choline alfoscerate

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Cholinergic precursors have represented the first approach recognized from a regulatory point of view to counter cognitive impairment occurring in adult-onset dementia disorders. ASCOMALVA [Effect of association between a cholinesterase inhibitor (ChE-I) and choline alfoscerate on cognitive deficits in AD associated with cerebrovascular injury] is a double-blind, controlled, randomized clinical trial investigating if the ChE-I donepezil and the cholinergic precursor choline alfoscerate in combination are more effective than donepezil alone. In this study, MRI from ASCOMALVA patients were analyzed for the evaluation of brain atrophy.

Participants to the ASCOMALVA trial underwent yearly MRI for diagnostic purposes. In 56 patients who achieved two years of therapy, MRI scans were analyzed by voxel morphometry techniques to assess if addition of choline alfoscerate to treatment with donepezil had an effect on brain volume changes known to occur in AD.

Reference group patients (treated with donepezil alone) developed a greater atrophy of the gray and white matter compared with the group treated with donepezil plus choline alfoscerate. In the reference group a concomitant increase of the space of the cerebrospinal fluid and of the volume of the ventriculi was noticeable. One of the most affected areas was the hippocampus. Neuropsychological tests over the 24-month observation period showed in patients of the reference group a moderate time-dependent worsening in all the parameters investigated. Treatment with donepezil plus choline alfoscerate resulted in better scores of the cognitive and functional items and in an improvement in behavioural parameters, superior to that induced by donepezil alone.

The above results have shown that treatment with choline alfoscerate plus donepezil versus donepezil alone counters to some extent hippocampal volume loss occurring in the brain of AD patients. The observation of a parallel improvement of cognitive and functional tests in patients treated with the cholinergic precursor loading strategy using choline alfoscerate indicates that morphological changes observed by MRI may have functional relevance.

Keywords

Alzheimer's disease; MRI; Voxel morphometry; Hippocampus.