rCBF pathology in Alzheimer's disease is associated with slow processing speed.

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Decreased information processing speed (mental slowing) is a known sequela of many brain disorders, and can be assessed by continuous naming tasks. Functional imaging studies have shown that pause and articulation times in continuous speech are normally associated with different brain regions, but knowledge about such association in dementia is lacking. We therefore tested the hypothesis that perfusion deficits in Alzheimer's disease (AD) are not only associated with slower processing, but also with these speech measures. Using regional cerebral blood flow (rCBF) measurements during the performance of a continuous colour and form-naming task, we found that naming speed was substantially slower in AD patients than in controls. This slower naming was exclusively determined by an increase in mean pause time, and only to a limited extent by articulation time. The increased pause time was uniquely associated with temporo-parietal rCBF reductions of the patients, while articulation was not. By contrast, the rCBF of healthy elderly control subjects was consistently accompanied by substantially shorter articulation and pause times, although the naming measures were not statistically associated with rCBF. These findings suggest that pause time (in contrast to articulation time) may serve as a sensitive measure in the assessment of information processing speed deficits in dementia, by virtue of its close association with brain pathology.

PMID: 18067929 [PubMed - as supplied by publisher]