

Mixed transcortical aphasia after stroke: a single case report with advanced disconnectomic analyses

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Mixed transcortical aphasia (MTA) represents an uncommon aphasic syndrome, characterized by severe deficits in both comprehension and production across oral and written linguistic modalities. Individuals affected by MTA typically demonstrate retention of repetition abilities, often manifesting as echolalia. In the present single case study, we report the case of a woman who presented with MTA symptoms after a left hemisphere ischemic stroke involving perisylvian areas. She presented, as expected, with poor comprehension and reduced spontaneous production abilities, while repetition was preserved for words, short sentences, and numbers. Notably, her reading abilities remained intact, in contrast with several previously reported MTA cases. We describe in detail her linguistic performance with an extended quantitative evaluation, as well as a qualitative assessment of non-verbal cognitive abilities. To further assess the brain-behavior relationship, we employed recently developed lesion-based approaches for probabilistic estimation of white matter disconnections to reveal which white matter tracts are likely related to the reported pattern of language impairment. The results showed a major disconnection of the left arcuate fasciculus, left inferior fronto-occipital fasciculus, left inferior longitudinal fasciculus, left optic radiation, and anterior commissure. The observed impairments of the patient in the repetition of long sentences and of numbers exceeding three digits might hence be explained based on the disconnection of the arcuate fasciculus' long and posterior branches, affecting short-term memory. Conversely, her preserved ability to repeat limited verbal material is supported by the intact anterior branch of the left arcuate fasciculus.

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