

CEREBRAL BLOOD FLOW SPECT IMAGING IN POST-STROKE APHASIA

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BACKGROUND: Aphasia is usually the result of cardiovascular diseases and occurs in 19-38% of stroke patients. Aphasic syndromes can be correlated to relatively specific brain lesions located in the left cerebral hemisphere. The relationship of portions of the perisylvian cortex to the different components of the language-processing system remains the subject of controversy. Regional cerebral blood flow (rCBF) patterns were evaluated in patients with distinct aphasic syndromes following stroke.

MATERIAL AND METHOD: The research involved 50 stroke patients with a single left-hemisphere lesion and residual aphasia. Language disorders, assessed according to the Weisenburg and Mc Bride classification and by the Boston Diagnostic Aphasia Examination, were divided into three groups: receptive, expressive and mixed aphasia. Single-photon emission computed tomography (SPECT) images of the brain were performed with Tc-99m-labeled ECD. Comparisons of reduced cerebral perfusion between patients with different types of aphasia were performed, as well as between patients with good and with poor recovery from aphasia.

RESULTS: The most prominent perfusion abnormalities in expressive aphasia were found in the parietal lobe and to the lesser degree in the frontal lobe, whereas the most prominent deficits in receptive aphasia were found in the left temporal and parietal regions and striatum. In mixed aphasia, SPECT images showed the most extensive damage involving both cortical and deep structures of the left cerebral hemisphere aside occipital lobe. Frontal CBF was significantly higher in patients with good language recovery compared to patients with poor recovery from aphasia and low degree of speech improvement.

CONCLUSIONS: CBF SPECT imaging is useful in elucidating aphasic syndromes and improves the predictive value of brain imaging after stroke. The present study highlights the integrative role of the subcortical structures in language and speech functions. Preservation of perfusion in left frontal lobe appears to be crucial in recovery from aphasia. The results support the usefulness of regional cerebral blood flow SPECT imaging as a diagnostic aid in the post-stroke aphasias.