

Shift of language function to right hemisphere impedes post-stroke aphasia recovery

April 4 2013

In a study designed to differentiate why some stroke patients recover from aphasia and others do not, investigators have found that a compensatory reorganization of language function to right hemispheric brain regions bodes poorly for language recovery. Patients who recovered from aphasia showed a return to normal left-hemispheric language activation patterns. These results, which may open up new rehabilitation strategies, are available in the current issue of *Restorative Neurology and Neuroscience*.

"Overall, approximately 30% of patients with stroke suffer from various types of aphasia, with this deficit most common in stroke with left [middle cerebral artery](#) territory damage. Some of the affected patients recover to a certain degree in the months and years following the stroke. The recovery process is modulated by several known factors, but the degree of the contribution of brain areas unaffected by stroke to the recovery process is less clear," says lead investigator Jerzy P. Szaflarski, MD, PhD, of the Departments of Neurology at the University of Alabama and University of Cincinnati Academic Health Center.

For the study, 27 right-handed adults who suffered from a left middle cerebral artery infarction at least one year prior to study enrollment were recruited. After language testing, 9 subjects were considered to have normal language ability while 18 were considered aphasic. Patients underwent a battery of language tests as well as a semantic decision/tone

decision cognitive task during functional MRI (fMRI) in order to map [language function](#). MRI scans were used to determine stroke volume.

The authors found that linguistic performance was better in those who had stronger left-hemispheric fMRI signals while performance was worse in those who had stronger signal-shifts to the [right hemisphere](#). As expected, they also found a negative association between the size of the stroke and performance on some linguistic tests. Right cerebellar activation was also linked to better post-stroke language ability.

The authors say that while a shift to the non-dominant right hemisphere can restore language function in children who have experienced left-hemispheric injury or stroke, for adults such a shift may impede recovery. For adults, it is the left hemisphere that is necessary for language function preservation and/or recovery.

More information: "Recovered vs. not-recovered from post-stroke aphasia: The contributions from the dominant and non-dominant hemispheres," by Jerzy P. Szaflarski, Jane B. Allendorfer, Christi Banks, Jennifer Vannest and Scott K. Holland. *Restorative Neurology and Neuroscience*, 31:4 (July 2013), [DOI 10.3233/RNN-120267](https://doi.org/10.3233/RNN-120267).

Provided by IOS Press

Citation: Shift of language function to right hemisphere impedes post-stroke aphasia recovery (2013, April 4) retrieved 19 April 2024 from <https://medicalxpress.com/news/2013-04-shift-language-function-hemisphere-impedes.html>

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