

Post Stroke Aphasia and Non-invasive brain stimulation

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Key points

- Introduction to aphasia
- Causes of aphasia
- Speech language therapy
- Non-invasive brain stimulation

We operationally define aphasia as an acquired selective impairment of language modalities and functions resulting from a focal brain lesion in the language-dominant hemisphere that affects the person's communicative and social functioning, quality of life, and the quality of life of his or her relatives and caregivers.¹ Aphasia typically develops slowly as a result of a brain tumor or a degenerative neurological condition, although it can also occur unexpectedly, frequently following a stroke or head accident. Moreover, Reading, writing, speaking, and understanding language are hampered by the disease. Most researchers agree on common elements in any definition of aphasia: Aphasia is a mostly language-level problem, includes receptive and expressive components, multimodal in nature, and is caused by a central nervous system dysfunction.

Stroke is considered the most important culprit underlying aphasia. It is the most devastating cognitive impairment of stroke and is present in 21%–38% of stroke patients with long-term morbidity and mortality. Studies have shown that recovery from aphasia is possible, even in severe cases.²

Pharmacological treatments have been under trial for decades; however, the desired results have not been achieved as the drug treatment alone was not effective, while other trials combining drugs with intensive model-driven speech language therapies

also failed, probably because of short trial duration, inadequate sample selection, or lack of drug action. Preliminary data revealed that combining neuroscience-based intensive aphasia techniques (constraint-induced aphasia therapy and drugs acting on cholinergic and glutamatergic neurotransmitter systems) is associated with better outcomes than other strategies and long-term maintenance of outcomes.³

Speech-language therapy:

Speech-language therapy remains the mainstay of treatment for aphasia, and the effectiveness of conventional therapies has not been conclusively proven. This has motivated attempts to integrate knowledge from several domains in an effort to plan more rational therapies

and introduce other therapeutic strategies, including the use of intensive language therapy and pharmacological agents.⁴

Noninvasive brain stimulation

Two non-invasive cortical stimulation approaches have been used in individuals with aphasia: repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation (tDCS). Recent reviews have confirmed that both rTMS and tDCS improve language performance. In recent years, tDCS has gained more attention than rTMS because it is believed to offer more advantages, such as cost, portability, and safety; however, rTMS may be more efficacious and affect long-lasting changes. In conclusion, these cortical stimulation techniques appear to enhance the effects of language therapy. However, before these can be used routinely in clinical situations, several candidacy issues require further investigation, and clinicians must determine which patients are most likely to benefit from this kind of stimulation.⁵

References:

1. Coppens P. Aphasia and related neurogenic communication disorders. Jones & Bartlett Publishers; 2016 Feb 11.
2. Berthier ML, Pulvermüller F, Dávila G, Casares NG, Gutiérrez A. Drug therapy of post-stroke aphasia: a review of current evidence. *Neuropsychology review*. 2011 Sep; 21:302-17.
3. Basso, A., Capitani, E., & Vignolo, L. A. (1979). Influence of rehabilitation on language skills in aphasic patients: A controlled study. *Archives of Neurology*, 36, 190-196.
4. Berthier ML. Poststroke aphasia: epidemiology, pathophysiology and treatment. *Drugs & aging*. 2005 Feb; 22:163-82.
5. American Speech-Language-Hearing Association. (2005). Evidence-based practice in communication disorders [Position statement]. Retrieved from <http://www.asha.org/docs/html/PS2005-00221.html>