Noninvasive brain stimulation may improve swallowing after stroke

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Stroke patients who received electrical brain stimulation coupled with swallowing exercises showed greater improvement in swallowing ability than patients who did not receive this stimulation, according to a pilot study reported in *Stroke: Journal of the American Heart Association*.

Difficulty swallowing, known as dysphagia, is a common and serious stroke complication. It can lead to aspiration, when food or foreign matter accidentally enters the lungs causing pneumonia. Aspiration and aspiration pneumonia are common complications after stroke and can be deadly.

The non-invasive brain stimulation used in this study (Transcranial Direct Current Stimulation, or tDCS) uses a weak electrical current. It is transmitted via electrodes placed on the scalp, to increase activity in targeted areas of the brain. Researchers noted:

• Patients who received brain stimulation increased their ability to swallow by more than 2.5 points on a seven-point swallowing scale, compared to slightly more than one point among those who did not receive the treatment. This was statistically significant, so it was not likely due to chance.

• Overall, swallowing ability improved by at least two points in 86 percent of patients receiving stimulation, and in 43 percent of those who did not. While these percentages showed a trend toward improvement, they did not reach statistical significance, likely due to the small study size.

"Further studies are warranted to refine this promising intervention by exploring effects of stimulation parameters, frequency of stimulation, and timing of the intervention in improving swallowing functions in dysphagic-stroke patients," researchers noted.

The study comprised 14 patients recruited from the inpatient stroke center at Beth Israel Deaconess Medical Center in Boston. All patients had suffered an ischemic stroke within the previous one to seven days. Participants were randomized so that some received tDCS to the brain regions that control swallowing while others received "sham stimulation." Those receiving sham stimulation were prepped as if they are going to receive tDCS but did not.

Provided by American Heart Association