Dysphagia and hemispheric stroke: a transcranial magnetic study.

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Abstract:

Abstract INTRODUCTION: Dysphagia is a common and distressing consequence of hemispheric stroke. STUDY AIM: To verify the usefulness of transcranial magnetic stimulation (TMS) studies of swallowing in healthy subjects and in stroke patients. MATERIAL AND METHODS: TMS studies of the motor cortical projections to the upper esophageal sphincter were performed in 45 patients with acute mono-hemispheric stroke (26 patients with dysphagia) and 20 healthy adult volunteers. RESULTS: TMS of either hemisphere in normal volunteers evoked motor evoked potentials (MEP) in the esophagus. The average point of optimal excitability was slightly more anterior in the right hemisphere; otherwise, MEP amplitudes and latencies were similar from both hemispheres as were the areas of the cortical map. The cortical map area and amplitude of MEPs were significantly smaller and the latencies longer after stimulation of the affected hemisphere compared with the unaffected hemisphere and pooled control data. Twenty-four dysphagic patients (92.3%) had abnormalities of MEP of the affected hemisphere, while only five non-dysphagic patients (26%) had these abnormalities. Dysphagic patients were older and had more disability compared with non-dysphagic patients. MEPs of the affected hemisphere of patients with dysphagia were later and smaller in amplitude than MEPs of non-dysphagic patients. The cortical map area was also smaller. CONCLUSION: The esophagus is represented bilaterally in motor cortex, but the hot spot lies more anterior to Cz in right hemisphere compared to left hemisphere. Both the severity of stroke and neuroplasticity of the unaffected hemisphere have implications in the development of dysphagia.

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