

## **Focal laryngeal dystonia: diagnostics, therapeutics and novelties in neurophysiologic research**

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Aim of study: To present and discuss diagnostic procedures, therapeutic options and novelties in neurophysiological research of laryngeal dystonia (LD), a rare movement disorder with an unknown cause affecting the intrinsic muscles of the larynx. Material and methods: 1) Literature overview of the on the standard guidelines in the diagnostics and treatment of LD; 2) The use of transcranial magnetic stimulation (TMS) in the neurophysiologic research of LD by investigation of cortical silent period (cSP) reflecting the intracortical inhibitory process mediated by GABAA and GABAB receptors; 3) The use of navigated TMS in mapping the laryngeal motor cortex by investigating the duration of cortical silent period in two LD cases, abductor and adductor LD type. Results: The study presents standard diagnostic, treatment of LD disorder, and results of investigation by groups from School of Medicine, University of Minnesota, Minneapolis, MN, USA and School of Medicine, University of Split, Croatia on the duration of cSP in vocal and cricothyroid muscles in LD patients and healthy control subjects. The research groups presented norms for cSP duration in vocal and cricothyroid muscle in healthy subjects and pointed to the altered (shortened) duration of the cSP in LD patients (adductor type). Conclusion: The cSP measure might be useful neurophysiologic biomarker for understanding the LD disorder. In LD, the cortical activation during phonation may not be efficiently or effectively associated with inhibitory processes, leading to muscular dysfunction. Promising techniques such as TMS might bring new light to the diagnosis and treatment of LD disorder.

Key words: Laryngeal dystonia, TMS, cortical silent period