

Automated acoustic analysis of task dependency in adductor spasmodic dysphonia versus muscle tension dysphonia.

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Abstract: OBJECTIVES/HYPOTHESIS: Distinguishing muscle tension dysphonia (MTD) from adductor spasmodic dysphonia (ADSD) can be difficult. Unlike MTD, ADSD is described as "task-dependent," implying that dysphonia severity varies depending upon the demands of the vocal task, with connected speech thought to be more symptomatic than sustained vowels. This study used an acoustic index of dysphonia severity (i.e., the Cepstral Spectral Index of Dysphonia [CSID]) to: 1) assess the value of "task dependency" to distinguish ADSD from MTD, and to 2) examine associations between the CSID and listener ratings. STUDY DESIGN: Case-Control Study. METHODS: CSID estimates of dysphonia severity for connected speech and sustained vowels of patients with ADSD (n=?36) and MTD (n=?45) were compared. The diagnostic precision of task dependency (as evidenced by differences in CSID-estimated dysphonia severity between connected speech and sustained vowels) was examined. RESULTS: In ADSD, CSID-estimated severity for connected speech (M=?39.2, SD=?22.0) was significantly worse than for sustained vowels (M=?29.3, SD=?21.9), [P=?0.020]. Whereas in MTD, no significant difference in CSID-estimated severity was observed between connected speech (M=?55.1, SD=?23.8) and sustained vowels (M=?50.0, SD=?27.4), [P=?0.177]. CSID evidence of task dependency correctly identified 66.7% of ADSD cases (sensitivity) and 64.4% of MTD cases (specificity). CSID and listener ratings were significantly correlated. CONCLUSION: Task dependency in ADSD, as revealed by differences in acoustically-derived estimates of dysphonia severity between connected speech and sustained vowel production, is a potentially valuable diagnostic marker. ? 2013 The American Laryngological, Rhinological and Otological Society, Inc. KEYWORDS: ADSD; CSID; MTD; Task dependency