Vocal and speech acoustic measures, perceptual-auditory analysis and communication self-evaluation in dysarthrias

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The typical characterization of dysarthrias, combined by perceptual and acoustic data, provides better information regarding the neuromotor skills for speech and communicative effectiveness and can be supplemented with the impact of the speech disorder on quality of life data to customize rehabilitation. The aim of this study was to characterize dysarthrias by auditory perceptual assessment of voice and speech and protocol of self-assessment. Voice and speech samples from 106 individuals, both sexes, were analyzed and divided into groups: dystonia (LD), amyotrophic lateral sclerosis (ALS) and amyotrophic lateral sclerosis wi th predominant bulbar symptoms (ALSb), Myasthenia Gravis (MG), Parkinson's disease (PD), essential vocal tremor (EVT) and controls up to and above 45 years. The "a" vowel and "iu" diphthong were recorded under the recommended conditions, and the protocol Living with Dysarthria was filled in by the individuals. Data were analyzed by visual analogue scale and Multi-Dimensional Voice Program, Kay Elemetrics, and Vox Metria, CTS Informatica, acoustic programs. The results showed that the rhythm discriminated dysarthrias from controls, and dystonia from dysarthria, except in articulatory integrity. The fundamental frequency variability in semitones differentiated all dysarthric from the controls, followed by the coefficient of fundamental frequency variability in% and standard deviation of fundamental frequency. The stability, MFTR and Matr variables showed satisfactory accuracy and better sensitivity. ShimmAPQ also showed satisfactory accuracy, but better specificity, whereas the extent of F0 variability (st) showed good accuracy with good stability and sensitivity. The total score of the Living with Dysarthria protocol differentiated dystonia from ALS and ALSb, showed no correlation with severity of dysarthria, nor with perceptual and acoustic variables. "Effects of emotions", "communicating like I would want" and how they perceived changes and the possibility to alter their way of speaking were the highest scores sections. Therefore, there were correlations perceptual and acoustic measures in dysarthric patients, varying accuracy and the communication impact should be investigated regardless of the severity of dysarthria.

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