BULBAR FEATURE ASSESSMENT: A MULTILEVEL APPROACH

**ABSTRACT**

Persons with bulbar features of ALS (PALS) are likely to experience a mixed spastic-flaccid dysarthria, a speech condition characterized by reduced intelligibility, at some point during disease progression. Existing staging systems are descriptive of PALS' current levels of speech functioning; however, they are not sensitive to early symptom detection. Frequently patients are not diagnosed until speech has deteriorated significantly. The bulbar neurons are prominent in differential diagnosis (El Escorial, 1999); therefore early identification of bulbar symptoms is crucial to facilitating diagnosis and increasing the earliest symptomatic PALS' participation in pharmaceutical trials. In addition, early speech symptom indicators may assist in the development of effective treatments designed to sustain functional intelligibility.

**METHOD**

**THREE LEVELS OF EVALUATION**

1. **Speaking rate & intelligibility**
2. Perceptual evaluation of bulbar symptoms using the Nebraska Bulbar Scale
3. Fine-grained quantitative analyses of speech and swallowing performance

**LEVEL I**

**RATE & INTELLIGIBILITY OF SPEECH**

Speech rate has been shown to predict disease severity reflected in overall intelligibility (Ball, Beukelman, Pattee, 2000, 2002).

- **Longitudinal study of > 300 persons with ALS, results consistent for all forms (Bulbar, Spinal, Mixed) of ALS**

**LEVEL II**

**NEBRASKA BULBAR SCALE**

The NBS was developed to address the need for a clinically-credible assessment tool for determining bulbar onset and symptom progress.

**LEVEL III**

**FINE-GRAIINED QUANTITATIVE ANALYSES OF SPEECH AND SWALLOWING PERFORMANCE**

**SPEECH-PAUSE ANALYSIS**

- **Computer based algorithm**
- **Time speaking & pausing of utterances from persons with ALS**

**3-D MOTION ANALYSIS**

- **Electromyography and movement of the lip, jaw, and tongue during speech are recorded using an 8 camera motion analysis system.**

**REFERENCES**

Ball, L., Beukelman, D., Pattee, G., Green, J. (Dec., 2005) Nebraska Bulbar Assessment, Scale Presentation to National ALS Research Consortium, Boston, MA.


References to other publications are not included in this text.