Treatment of Dysarthria in Patients with Multiple Sclerosis

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What is MS?

• An autoimmune disease
• Destruction of myelin
• Destruction of axons
What is MS?

- **Etiology/Pathophysiology**
  - Cause is unknown
  - No specific gene has been identified

- **Age of onset**
  - Symptoms occur between the ages of 20 – 40
  - Rarely manifests before age 15 or after age 60
Epidemiology

- Affects 250,000 – 350,000 people in the US
- Women are twice as likely as men to be affected
- Northern European heritage are most likely to be affected
- Very rare among Asians, North & South American Indians, and Eskimos
- Higher incidence in Northern US, Canada and Northern Europe than the rest of the world
- Rare between the equator and latitudes 30 – 35 degrees north and south

- National MS Society
Environmental Factors

- Climate
- Humidity
- Hours of daily sunshine
- Resistance to certain viruses
- Consumption of cow’s milk
- Toxins
- Trauma
Progression

• Slowly progressive disease of the CNS
• Four types of MS
  ▪ Relapsing-Remitting – 80-85%
  ▪ Secondary Progressive – 70% of the 80-85%
  ▪ Primary Progressive – 15-20%
  ▪ Progressive-Relapsing – Rare

  ▪ National MS Society
Symptoms & Signs

- Weakness
- Fatigue
- Sensory loss
- Bladder or bowel dysfunction
- Vertigo
- Dysphagia
- Ataxia
- Dysarthria
Effects on Speech, Language and Swallowing

- Swallowing
- Language
- Speech
  - Spastic
  - Ataxic
  - Mixed: spastic and ataxic

- Duffy (2005)
Treatment

• Glutamate Excitotoxicity – Pitt, Werner, & Raine (2000)
• Music Therapy – Wiens, Reimer, & Guyn (1999)
• Deep Brain Stimulation -Putzer, Barry, & Moringlane (2007)
• Inspiratory -Klefbeck & Nedjad (2003)
• Expiratory - Chiara, Martin, & Sapienza (2007)
• Rate and Loudness -Miller (no date) & Tjaden & Wilding (2004)
Deep Brain Stimulation

- 7 patients with MS with severe ataxia and intention tremor
- Electrodes implanted into left and/or right ventrolateral area of thalamus
  - Limb ataxia and tremor improved
  - Decreased articulatory performance
  - Strained phonation in female patients

- Putzer, Barry, & Moringlane (2007)
Inspiratory Muscle Training

• Patients received 10 weeks of training
• Inspiratory Muscle Training (IMT) device
• One month post-training benefit

Expiratory Muscle Training

- 17 participants with MS
- 8 week training period
- Positive Expiratory Pressure (PEP) threshold trainer
- Maximum Expiratory Pressure (MEP)
- Vowel prolongation increased, e.g. [ah]
- No effects of dysarthria

Chiara, Martin, & Sapienza (2007)
Rate

- Rigid rate control
  - Metronome
  - Finger tapping
  - Alphabet board

- Rhythmic rate control
  - Visipitch
  - Auditory feedback
  - Direct Magnitude Production (DMP)

Reduced rate
- Improved intelligibility
- Loss of naturalness of speech

- Miller (no date)
Loudness

- Lee Silverman Voice Treatment (LSVT)
- Increased vowel space
- Increased intelligibility
- Increased ease of perception

Tjaden & Wilding (2004)
Summary

• Variability among MS
• Varying types of dysarthrias
• Varying degrees of severity of dysarthria
• No clear-cut treatment options
Judy
References

References cont.


• *National MS Society*. Speech and Swallowing Disorders. Retrieved 2008-02-14, from [www.nationalmssociety.org/sourcebook](http://www.nationalmssociety.org/sourcebook)


