

Short-Term Follow-Up of Oropharyngeal Dysphagia in a Patient with Multiple System Atrophy



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Introduction

Multiple System Atrophy

- Multiple System Atrophy (MSA) is a neurological disorder that affects the basal ganglia, autonomic, and cerebellar systems.
- MSA occurs in adults, both women, and men.
- MSA is commonly characterized by slowness in movement, tremor, incontinence, incoordination, impaired speech, and lightheadedness.

Dysphagia and MSA

- Common symptom of MSA is swallowing dysfunction, also known as dysphagia. Dysphagia usually occurs later in the course of the disease and can be deadly (Swan & Dupont, 1999).
- Oropharyngeal dysphagia is frequent in patients with MSA. Oropharyngeal dysphagia involves difficulty initiating a swallow and loss of airway protection.

Purpose of Study

- The purpose of this study was to examine changes in temporal aspects of swallow in a patient with MSA. This study would provide knowledge of swallowing dysfunction and its progression in patients with MSA.

Methods

Subjects

- Patient is a 60-year-old male whose onset of multiple system atrophy (MSA) occurred in 2009. The patient has a diagnosis of Parkinson's type of MSA (MSA-P).
- Normal subject is a 61-year-old male

Videofluoroscopic Swallowing Examinations (VFSE)

Evaluations

- Initial - 1/21/2013
- Follow-up - 4/29/2013

Bolus Consistencies

- 5 ml thin
- 5 ml thick
- 5 ml puree

Temporal Measurements

- Oral transit time (OTT)*: time it takes the bolus to flow through the oral cavity
- Pharyngeal transit time (PTT)*: time it takes the bolus to travel from the ramus of the mandible to the UES
- Initiation of laryngeal closure (ILC)*: time between the bolus passing the ramus of the mandible and the first contact of the arytenoids and the epiglottis
- Laryngeal closure duration (LCD)*: time that the arytenoid cartilages and the epiglottis are approximated
- Duration of UES opening*: time between the initial opening of the UES and when the tail of the bolus passes the UES

Results

Table 1. Mean of oral transit time (seconds)

	Initial evaluation	Follow up evaluation	Normal
Thin	0.637	0.439	0.66
Thick	0.561	1.472	0.703
Puree	0.934	3.901	1.132

Table 2. Pharyngeal transit time (seconds)

	Initial evaluation	Follow up evaluation	Normal
Thin	0.825	0.934	0.538
Thick	0.67	1.802	0.627
Puree	1.67	1.528	0.495

Table 3. Mean of duration of UES opening (seconds)

	Initial evaluation	Follow up evaluation	Normal
Thin	0.627	0.637	0.396
Thick	0.498	0.538	0.462
Puree	0.571	0.495	0.297

Table 4. Mean of Initiation of laryngeal closure (seconds)

	Initial evaluation	Follow up evaluation	Normal
Thin	0.198	0.363	0.172
Thick	0.142	1.264	0.165
Puree	0.649	1.099	0.198

Table 5. Mean of laryngeal closure duration (seconds)

	Initial evaluation	Follow up evaluation	Normal
Thin	0.934	1.033	0.531
Thick	1	0.868	0.627
Puree	1.351	0.736	0.439

Conclusion

- The effects of MSA can contribute to an unsafe swallow and difficulties in all swallowing stages.
- As muscle coordination and strength decline, a patient with MSA has longer oral transition time.
- A patient with MSA showed longer pharyngeal transit time in the follow-up evaluation than initial evaluation. This can cause a higher risk for aspiration.
- Incoordination of muscle movement occurs, and laryngeal elevation decreases as the disease progresses. These factors could contribute to the larynx closing more slowly.
- A patient with MSA has compensation for airway protection during the swallowing. The prolonged laryngeal closure compensates slow initiation of laryngeal closure and longer duration of UES opening compensates the prolonged pharyngeal transit time.
- Changes in temporal measurements can indicate progression of swallowing dysfunction.
- Understanding how swallowing progresses in patients with MSA can be beneficial for determining assessment and treatment

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