P-133 Temporal Changes of Dysphagia and Tongue Thickness in Amyotrophic Lateral Sclerosis Patients

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Introduction

- Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease that affects the motor neurons in the brain and spinal cord, leading to weakness, atrophy of the muscles and other complications.
- Dysphagia is a common complication in patients with ALS. **It can lead to malnutrition, dehydration, pneumonia and reduced quality of life (QOL), which altogether accelerate progression of the disease.**
- In this study, we investigated the temporal changes of dysphagia in patients with ALS over 1 year to identify the progression of dysphagia and its relationship with disease severity.

Table 1. Characteristics of the ALS patients

Characteristics	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Sex	Male	Male	Male	Female	Male
Age (years)	60	59	57	69	61
ALS onset type	Limb	Limb	Limb	Limb	Limb
BMI (kg/m^2)					
Baseline	23.6	27.0	22.9	17.6	16.3
Follow-up	21.6	26.5	21.1	17.6	16.8
Follow-up interval (months)	12	6	12	6	6

BMI: body mass index.

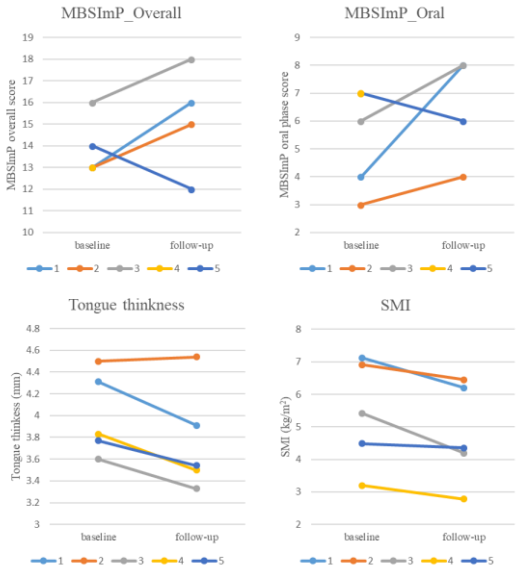

Figure 1. The temporal changes of MBSImP, tongue thickness and SMI in participants

Materials and Methods

- This prospective study assessed 5 patients with ALS referred to the department of rehabilitation between November 2021 and January 2023.
- To evaluate the patients' severity of dysphagia, we performed Videofluoroscopic swallowing study (VFSS) and scored with the *Modified Barium Swallow Impairment Profile (MBSImP).*
- Outcome measurements
  - Skeletal muscle index (SMI, sum of appendicular skeletal mass (Kg) / heights^2 (m^2))
  - Tongue muscle thickness
  - Dysphagia Handicap Index (DHI)
  - Eating Assessment Tool (EAT-10)
  - American Speech-Language-Hearing Association's National - Outcomes Measurement System (ASHA NOMS)
  - Functional Oral Intake Scale (FOIS)
  - Mann Assessment of Swallowing Function (MNA_SF)
  - Korean Swallowing-Quality of Life Questionnaire (K-SWAL-QOL)
  - Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS)
  - pulmonary function tests (PFT)

Results

- The overall **MBSImP** score increased (especially **oral component**) over time. (Figure 1.)
- **Tongue thickness, SMI** decreased at follow-up examination in most patients. (Figure 1.)
- **Oral intake scales, swallowing QOL, nutritional status, and pulmonary function test** were worsened as the disease progressed.

Conclusions

- There was a positive correlation between dysphagia severity and sarcopenia as indicated by the decrease in tongue thickness and SMI.
- Tongue thickness measurement using ultrasound might be beneficial for repetitive swallowing evaluation without radiation exposure.
- A comprehensive evaluation of dysphagia in ALS patients is essential for the establish individualized treatment plans.
- More long-term studies with large sample sizes will be needed for identifying relationship between dysphagia and tongue thickness.

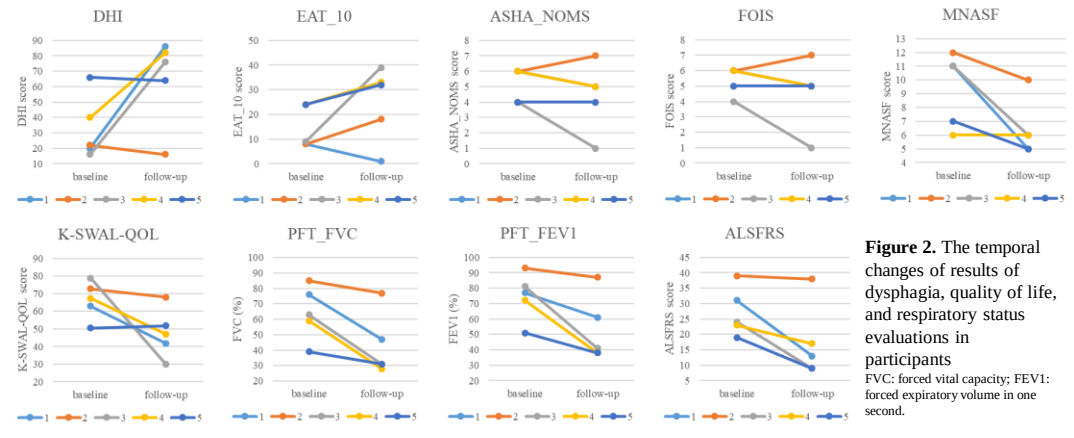

Figure 2. The temporal changes of results of dysphagia, quality of life, and respiratory status evaluations in participants

FVC: forced vital capacity; FEV1: forced expiratory volume in one second.