

**Oropharyngeal swallowing functions are impaired in patients with scleroderma**

Sirs,

Scleroderma or systemic sclerosis is an autoimmune chronic disease characterised by small vessel involvement that leads to tissue ischaemia and fibroblast stimulation, resulting in accumulation of collagen in the skin and internal organs (1). It has been reported that 87% of patients with progressive systemic sclerosis complained of dysphagia. Even during the first examination, 60% of patients complain of dysphagia (2-4). Although dysphagia symptoms are common in scleroderma, these conditions are often overlooked. In the literature there were previous studies with videofluoroscopic evaluation of deglutition disorders in patients with scleroderma. A videofluorographic swallow study identified alterations of epiglottal tilting associated with intraswallowing laryngeal penetration in patients (5). There is no previous objective study which assessed pharyngeal phase of swallowing in patients with scleroderma.

This study was carried out at the Otolaryngology, Rheumatology and Physical Medicine and Rehabilitation Department, Izmir, Turkey, between August 2013 and June 2015 and in concordance with international ethical standards and the World Health Organisation Helsinki Declaration. In this study, we included 28 patients (25 females and 3 males from 28 to 72 years of age with a mean age of 48.39±12.48 years) with scleroderma and 40 healthy individuals (33 females and 7 males from 27 to 78 years of age with a mean age of 48.25±12.37 years). Patients had been diagnosed according to the American College of Rheumatology/European League against Rheumatism criteria (6). FEES was performed by KAY PENTAX Ltd, Montvale, NJ, USA and Olympus, 3.6 mm diameter fiberoptic endoscope. Presence of residue, penetration and aspiration during FEES was noted. Scores of MDADI(7) and BDI(8) were evaluated. Regarding the FEES, the most obvious finding was residue with cracker (solid food). A statistically significant difference was detected in the residue (in the vallecula, retrocricoid area, pharyngeal wall or piriform sinuses) during swallowing with fish-shaped crackers ( $p<0.05$ ). (Table I). Regarding the MDADI, the average scores were 50.32±16.95 and 87.6±10.67 for study and control groups respectively and a statistically significant difference was detected ( $p<0.05$ ) (Table I). Regarding the BDI the average scores were 15.07±12.07 and 8.03±6.84 for study and control groups, respectively ( $p<0.05$ ) (Table I).

The FEES findings, quality of life and the deglutition disorders of patients with scleroderma were evaluated and compared with the normal group. The presence of residue

**Table I.** Findings of fiberoptic endoscopic evaluation of swallowing (FEES), MD Anderson Dysphagia Inventory Scores and Beck Depression Inventory Scores of study and control groups.

		Study Group (n, %)	Control Group (n, %)	p-value
Yogurt	No residue	19 (67.9%)	32 (80%)	
	Residue in vallecula	1 (3.6%)	4 (10%)	$p>0.05$
	Residue in pharyngeal wall	7 (25%)	4 (10%)	$*p<0.05$
	Retrocricoid region	1 (3.6%)	0	$p>0.05$
	Residue in piriform sinus	0 (0%)	0	$p>0.05$
	Total Residue	8 (28.6%)	8 (20%)	$p>0.05$
	Penetration	0	0	$p>0.05$
	Aspiration	1 (3.6%)	0	$p>0.05$
Fish-shaped cracker	No residue	20 (71.4%)	34 (85%)	
	Residue in vallecula	3 (10.7%)	4 (10%)	$*p<0.05$
	Residue in pharyngeal wall	0 (0%)	2 (5%)	$p>0.05$
	Retrocricoid region	5 (17.9%)	0	$*p<0.05$
	Residue in piriform sinus	0 (0%)	0	$p>0.05$
	Total Residue	8 (28.6%)	6 (15%)	$*p<0.05$
	Penetration	0	0	$p>0.05$
	Aspiration	0	0	$p>0.05$
3 ml water	Residue/Penetration/Aspiration	0/0/0	0/0/0	$p>0.05$
5 ml water	Residue/Penetration/Aspiration	0/0/0	0/0/0	$p>0.05$
10 ml water	Residue/Penetration/Aspiration	0/0/1 (3.6%)	0/0/0	$p>0.05$
BDI	As minimal depression	13 (46.4%)	32 (80%)	
	As mild depression	9 (32.1%)	6 (15%)	
	As moderate depression	4 (14.3%)	2 (5%)	
	As severe depression	2 (7.1%)	0	
	Depression groups			$*p<0.05$
	Mean score	15.07	8.03	$*p<0.05$
	Mean MDADI scores	50.32 ± 16.95	87.6 ± 10.67	$*p<0.05$

was the most prominent finding during swallowing of solid foods in patients with scleroderma. According to the MDADI, these patients' life standards were reduced due to dysphagia. Moreover, a higher incidence of psychological disorders appear in these patients according to the BDI. Dysphagia should be considered during the management of scleroderma patients. Nutrition disorders may be avoided by treating dysphagia in scleroderma.

Oropharyngeal disorders had a higher incidence of pulmonary disease in patients with scleroderma (9). The formation of residue during swallowing poses a risk in terms of laryngeal penetration and aspiration. It suggests that the incidence of aspiration pneumonia may be higher in patients with scleroderma than in the normal population and that this would increase morbidity and mortality. It has been shown that the oesophageal dysmotility that arises in patients with scleroderma in the early/late stages may also be effective in the emergence of swallowing symptoms. Previous reports suggested that the oral and oesophageal phase was responsible for dysphagia in scleroderma (9). The pharyngeal phase is often overlooked, but with rehabilitation techniques the effects on pharyngeal phase can be healed. Furthermore, by showing residue, the pharyngeal phase was shown to be deteriorated in scleroderma for the first time.

This is one of the first studies which shows objective findings in oropharyngeal swallowing dysfunction in scleroderma. We evaluated swallowing functions with fiberoptic endoscopy. In the vast majority

of previous studies, swallowing functions were evaluated only by subjective patient symptoms or videofluoroscopy.

In conclusion, swallowing dysfunction and its association with lower quality of life and higher incidence of depression in patients with scleroderma has been shown by objective findings for the first time. Presence of residue was the primary abnormality which affected the pharyngeal phase of swallowing in scleroderma. The pharyngeal phase disorders can be treated by different physical exercises and rehabilitation methods, thus showing its clinical importance.

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Competing interests: none declared.

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## Letters to the Editors

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