Review (Derleme)

Approach to Dysphagia

Disfajiye Yaklaşım

Saime GUZELSOY SAGIROGLU[1]

[1] Department of Otorhinolaringology, Faculty of Medicine, Kahramanmaras Sutcu Imam University, Kahramanmaras, Türkiye

Özet

Disfaji bir semptomdur. Hastaların şikayetleri, yutma işlemini başlatamamaktan, katı veya sıvıların yemek borusundan mideye geçişleri sırasında engellendiği hissine kadar değişir. Disfajili hastaların değerlendirilmesi ve tanı konulması önem arz etmektedir. Bu araştırmada, disfajili hastaların patogenezi, tanısı ve değerlendirmesi ayrı ayrı tartışılmaktadır.

Anahtar Kelimeler: Disfaji, etyoloji, tanı, tedavi

Abstract

Dysphagia is a symptom. Patients' complaints range from an inability to initiate swallowing to a feeling that solids or liquids are blocked from passing through the esophagus into the stomach. It is important to evaluate and diagnose patients with dysphagia. In this study, the pathogenesis, diagnosis, and evaluation of patients with dysphagia are discussed separately.

Keywords: Dysphagia, etiology, diagnosis, treatment

Correspondence: Saime GUZELSOY SAGIROGLU Department of Otorhinolaringology, Faculty of Medicine, Kahramanmaras Sutcu Imam University, Avsar Campus, 46100, Kahramanmaras, Türkiye

Phone: +90 344 3003335 **e-mail:** ssguzelsoy@hotmail.com

ORCID No: 0000-0003-2608-7274

Submission Date: 16/07/2024

Acceptance Date: 17/09/2024

DOI: 10.17517/ksutfd.1516965

INTRODUCTION

Dysphagia is a symptom. It occurs due to mechanical obstruction of the passage of liquid or solid food from the mouth to the stomach, decreased strength, or impaired coordination of the muscles that provide the swallowing movement. It may be due to a structural or functional abnormality that interferes with the passage of solids or liquids from the oral cavity to the stomach.

EPIDEMIOLOGY

The incidence in people over the age of 50 is 10%. Dysphagia is observed in 30-60% of home care patients. This rate increases with age. Dysphagia is observed in approximately 12% of hospitalized patients with head injury, stroke, Parkinson's disease, etc. Oropharyngeal dysphagia is seen at a rate of 30-50% in the patient group (1). In a survey study, 16% of over 31,000 adults had dysphagia (a mean age of 46.5 years). Of those with dysphagia, 16% reported severe symptoms (2).

DEFINITION

The terms dysphagia, odynophagia, and Globus are defined as follows: Dysphagia is a subjective sensation of difficulty or abnormality of swallowing. Odynophagia is pain with swallowing. Globus sensation is a non-painful sensation of a lump, tightness, foreign body, or retained food bolus in the pharyngeal or cervical area (3). Globus is a functional esophageal disorder characterized by a Globus sensation. However, there is no underlying structural abnormality, gastroesophageal reflux disease, eosinophilic esophagitis, or a major esophageal motility disorder.

Dysphagia leads to several complex factors that occur in neurological diseases, closed head injuries, head and neck cancer, surgeries, spinal cord injuries, and orthopedic injuries. In addition to dysphagia, regurgitation, and weight loss may occur. In some patients, the cause of dysphagia cannot be distinguished and is called functional dysphagia. Dysphagia towards both liquid and solid foods more often suggests motility disorders. Pathology may occur in the oropharyngeal or esophageal phases of swallowing.

1. Oropharyngeal dysphagia: Also called transfer dysphagia, it is mostly caused by neurogenic, myopathic, and metabolic causes. Causes of oropharyngeal dysphagia:

A. Neuromuscular causes

Stroke, Parkinson's disease, Multiple sclerosis, Myasthenia gravis, Head trauma, Dementia, Bell's palsy, Thyroid dysfunction, Polymyositis/Dermatomyositis, Sarcoidosis, Cerebral palsy, Metabolic encephalopathy, Idiopathic upper esophageal sphincter dysfunction, Cranial nerve tumors, Muscular dystrophy, Amyotrophic lateral sclerosis.

B. Structural causes

Oropharyngeal tumors, Zenker Diverticuli, Pharynx or throat infection (Candida mucositis, Herpes, Cytomegalovirus), Thyromegaly, Previous operation or radiotherapy, Osteophyte or other spinal diseases, Proximal esophageal webs, Congenital anomalies (cleft palate, etc.), Poor tooth structure.

2. Esophageal dysphagia: Esophageal dysphagia arises from within the body of the esophagus, the lower esophageal sphincter, or cardia. Causes of esophageal dysphagia:

A. Neuromuscular (motility) diseases

Diffuse esophageal spasm, Nutcracker esophagus, Hypertensive lower esophageal sphincter, Achalasia, Ineffective esophageal motility, Scleroderma and other rheumatological diseases, Reflux-related dysmotility, Chagas disease.

B. Structural (mechanical) Diseases

Peptic stricture, Esophageal rings and webs, Diverticula, Carcinoma and benign tumors, Foreign bodies, Eosinophilic esophagitis, Vascular compression, spinal osteophytes, Mucosal damage (drug, infection, GERD), and Mediastinal mass.

3. Odynophagia: A history of odynophagia (pain with swallowing, typically in the chest) should prompt concern about possible esophagitis. However, the following causes should also be investigated. Causes of odynophagia:

A. Caustic intake (acid, alkali)

B. Drugs: Alendronate and other bisphosphonate group, Aspirin and other nonsteroidal anti-inflammatory drugs, Iron preparations, Potassium chloride (especially slow-release forms), Quinidine, Tetracycline and its derivatives, Zidovudine, Emepronium bromide.

C. Infectious esophagitis: Viral (Cytomegalovirus, Epstein-Barr virus, Herpes simplex virus, Human immunodeficiency virus), Bacterial (Mycobacterium tuberculosis or avium complex), Fungal (Candida, Histoplasmosis), Protozoan (Cryptosporidium, Pneumocystis).

D. Severe reflux esophagitis

E. Esophageal carcinoma

EVALUATION OF DYSPHAGIA

As it is known, swallowing has three phases: the oral phase, pharyngeal phase, and esophageal phase. The oral phase is a voluntary phase, but the pharyngeal and esophageal phases are involuntary. Therefore, determining where the problem is is important for diagnosis and treatment.

Oropharyngeal dysphagia patients have difficulty initiating swallowing or report that food sticks immediately after swallowing. Patients may indicate the cervical region as the location of their symptoms. Swallowing may be accompanied by nasopharyngeal regurgitation, aspiration, and a sensation that food remains in the pharynx. Oral dysfunction may lead to drooling, hypersalivation, swallowing small pieces, and dysarthria. Pharyngeal dysfunction may lead to coughing or choking during food consumption and dysphonia.

Patients with esophageal dysphagia have difficulty swallowing several seconds after initiating a swallow, and a sensation that foods and/or liquids are being obstructed or delayed in their passage from the upper esophagus to the stomach. Patients may point to the suprasternal notch or to an area behind the lower part of the sternum as the site of obstruction (4).

Dysphagia to both solids and liquids from the onset of symptoms is perhaps due to a functional disorder of the esophagus. Dysphagia to solids only is usually present when the esophageal lumen is narrowed to 13 mm or less (eg, by a stricture, ring, web, or extrinsic compression). Progressive dysphagia, beginning with dysphagia to solids followed by dysphagia to liquids, is usually caused by a peptic stricture or obstructing lesion (5). Symptoms of peptic stricture are slowly and gradually progressive, whereas those due to a malignancy progress more rapidly (16). Patients with motility disorders may also exhibit progressive dysphagia (eg, achalasia) or may exhibit intermittent or nonprogressive dysphagia (eg, distal esophageal spasm).

DIAGNOSIS

Laboratory tests

Complete blood count is a simple and important test, especially in ruling out anemia. For Plummer-Vinson syndrome, characterized by iron deficiency anemia and upper esophageal web, low blood hemoglobin, increased iron binding capacity, and ferritin are important in the etiology of dysphagia. Sedimentation, thyroid function tests, and, if clinically necessary, specific laboratory tests (such as anti-centromere antibody and anti-Scl-/0 antibody in case of suspicion of scleroderma) may also be examined.

Fiberoptic endoscopic swallowing study (FESS)

It is an important test used in the evaluation of patients with dysphagia. This examination can be used more prominently as it can be performed in outpatient clinic conditions, does not contain radiation, and is easy to use at the bedside in immobile patients. Following flexible endoscopic examination, FESS is performed **(Figure 1)**.The oropharynx, hypopharynx, and larynx are evaluated by giving food of three different consistencies (solid, liquid, and semi-solid) **(Figure 2)**. The time it takes for the bolus to pass from the oral cavity to the oropharynx and hypopharynx, the functioning of the upper esophageal junction, food penetration into the vocal cords, aspiration through the glottic opening and whether a cough develops as a result, and the presence of residual food in the vallecula and both sinuses piriformis are evaluated **(Figure 3)**. However, FEES has the disadvantage that it requires specialized training in both swallow physiology and flexible endoscopy.

Endoscopy

It is among the important examinations in terms of evaluating the esophageal and gastric mucosa and allowing biopsy in case of suspicious areas. Patients with

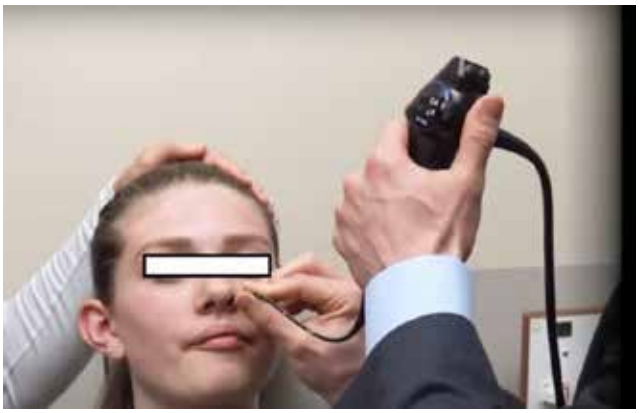

Figure 1. Flexible Endoscopy Procedure

Figure 2. Semi-solid and liquid foods dyed with food coloring

Figure 3. Fiberoptic Endoscopic Evaluation of Swallow (FEES) (Semi-solid food penetration)

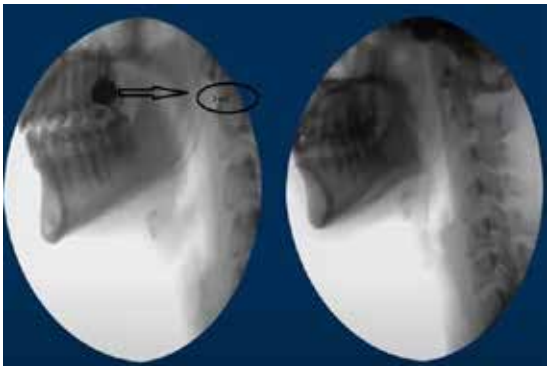

Figure 4. Swallowing with videofluoroscopy

esophageal dysphagia should be referred for an upper endoscopy to determine the underlying cause, exclude malignancy, and perform therapy (e.g, dilation of an esophageal ring) if needed (7,8).

Videolaryngoscopic swallowing study (VFSS)

Its other known name is the modified barium swallow test. Food is given in all three consistencies, and radiological imaging is taken until the food bolus passes into the stomach and is recorded on video **(Figure 4)**. Since the image is taken from the inside in the fiberoptic endoscopic swallowing study, instantaneous image closure (white blindness) is not seen in VFSS. While there is a good correlation between FEES and videofluoroscopy, penetration/aspiration risk is perceived to be more severe on FEES as compared with videofluoroscopy assessment (9-11). However, its disadvantages include the small amount of radiation it receives and its cost.

Barium Esophageal Passage X-ray

A method of X-ray imaging after ingestion of a barium solution. It is the first choice test in patients with a history/clinical features of a proximal esophageal lesion (e.g., surgery for laryngeal or esophageal cancer, Zenker diverticulum, or radiation therapy involving the head, neck, or chest).

Esophageal Manometry

For patients with nondiagnostic upper endoscopy, the next step is usually esophageal manometry. It is useful in assessing lower and upper esophageal sphincter pressure and esophageal motility. Barium esophagogram is not routinely obtained, but may show subtle lower esophageal rings or extrinsic esophageal compression that may be missed by upper endoscopy (12-14).

Electromyography

It is especially useful in upper esophageal sphincter spasms. It can be used when neurological diseases such as Myasthenia Gravis and amyotrophic lateral sclerosis are suspected.

Radiological imaging

Magnetic resonance imaging (such as soft tissue diseases), computed tomography, ultrasonography, and lateral cervical roentgenograms (such as vertebral osteophytes) can also be used in appropriate patients.

DIFFERENTIAL DIAGNOSIS

The following diseases are in the differential diagnosis: Esophageal stricture, Peptic stricture (e.g., systemic sclerosis, Zollinger-Ellison syndrome, nasogastric tube placement, and after Heller myotomy or peroral esophageal myotomy for achalasia), esophageal spasm, chronic radiation esophagitis, esophageal or laryngeal cancer, drug-induced stricture, eosinophilic esophagitis cardiovascular abnormalities, achalasia, lymphocytic esophagitis, Sjögren's disease (15-19).

Chronic heartburn in a patient with dysphagia may be a clue to complications of gastroesophageal reflux disease, such as erosive esophagitis, peptic stricture, or adenocarcinoma of the esophagus. Patients with peptic stricture usually have a history of heartburn and regurgitation and later weight loss, while patients with esophageal cancer tend to be older males with significant, rapid weight loss (20). In spastic motility disorders such as diffuse esophageal spasm, there is chest pain and sensitivity to cold drinks.

TREATMENT

The goals of the management of oropharyngeal dysphagia are to improve food transfer and prevent aspiration. Treatment should be planned according to the underlying cause. If there is anemia, iron treatment should be given, and if there is myasthenia gravis, pyridostigmine treatment should be given, and the improvement should be monitored. In reflux esophagitis, it can be observed that the complaint of dysphagia decreases by

Figure 5. Mendelsohn Maneuver

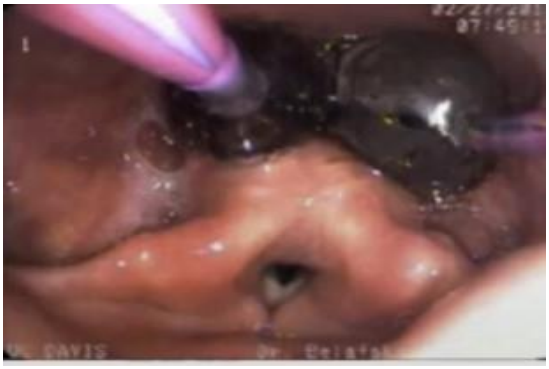

Figure 6. Endoscopic Balloon Dilatation

giving proton pump inhibitors and antacid treatment. In cases where salivary secretion is reduced (such as head and neck radiotherapy, Sjögren's), patients can be given oral pilocarpine for 2-3 months.

Swallowing rehabilitation and nutrition

Swallowing rehabilitation may be recommended for patients with mild oropharyngeal dysphagia (e.g., after stroke, head or neck trauma, surgery, or degenerative neurologic disease). Enteral feeding may be recommended in patients with severe dysfunction and risk of aspiration. Changing the head position during swallowing (such as tilting the head forward, or tilting the head back), oral-motor exercises, modified Valsalva maneuver, and Mendelsohn maneuver are the most commonly used swallowing exercises **(Figure 5)**. Dietary modification may improve swallowing and help prevent aspiration. For example, for patients with intolerance to liquids, commercially available food additives that thicken liquids may be beneficial because increasing bolus viscosity may improve swallowing function (21,22).

Cricopharyngeal myotomy

Cricopharyngeal myotomy should be considered for patients who have primary cricopharyngeal dysfunction characterized by inadequate pharyngeal contraction, lack of coordination between the pharynx and the UES, or inadequate UES relaxation/reduced muscular compliance (23). Although there are no randomized trials, case series have suggested that cricopharyngeal myotomy has an overall response rate of approximately 60 percent in patients with neurogenic causes of oropharyngeal dysphagia (24).

Cricopharyngeal balloon dilatation

In patients with cricopharyngeal dysphagia who are not surgical candidates, endoscopic dilatation is a reasonable alternative **(Figure 6)**.

Botulinum toxin injection

Botulinum toxin injection can be applied to patients with cricopharyngeal muscle spasms. Chewing function can also be facilitated by applying botulinum toxin injection to patients with masseter muscle spasms. This application can be done with USG guidance **(Figure 7)**.

Neuromuscular electrical stimulation

Direct stimulation of muscles to activate motor units and increase muscle strength.

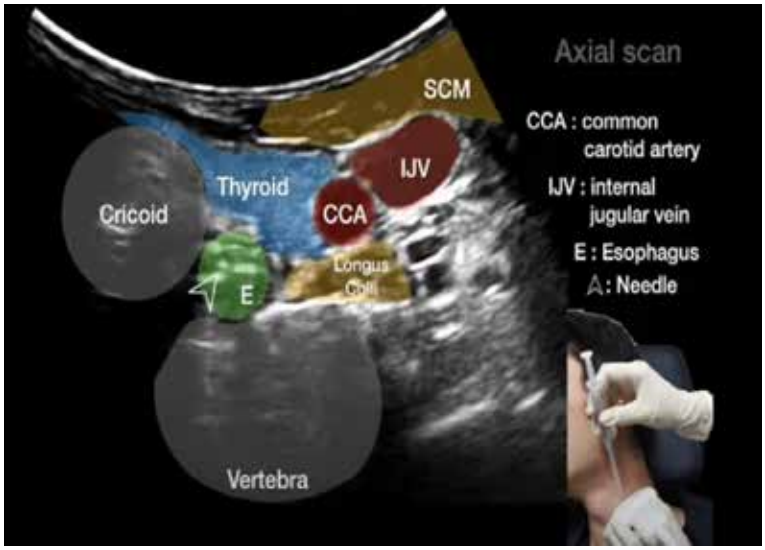

Figure 7. USG-guided botox application to the cricopharyngeal muscle

Structural disorders

If vertebral osteophyte formation is detected in radiological examinations, rehabilitation therapy and/or surgical excision can be planned.

CONCLUSION

Dysphagia may be due to structural or motility abnormalities in the passage of solid or liquid foods from the oral cavity to the stomach. It is a significant source of morbidity and mortality in the general population. It is an alarm symptom that warrants rapid evaluation to determine the exact cause and initiate appropriate treatment. Treatment options range from medical therapies and swallowing therapy to surgical interventions.

Conflict of Interest: The authors declared no potential conflicts of interest concerning this article's research, authorship, and/or publication.

Financial Status: No financial support was received for the study.

Author contribution: Idea, writing, editing: S.S.G.

REFERENCES

1. Hemant K, Satpathy MD. Dysphagia: Evaluation and treatment. Gastroenterol Clin North Am. 2003;32(2):553-75.
2. Shamburek RD, Farrar JT. Disorders of the digestive system in the elderly. N Engl J Med. 1990;322(7):438-43.
3. Tawil J, Fass R. Globus: Current Concepts and Dilemmas. J Clin Gastroenterol. 2018; 52(10):845-52.
4. Wilcox CM, Alexander LN, Clark WS. Localization of an obstructing esophageal lesion. Is the patient accurate? Dig Dis Sci. 1995;40(10):2192-6.
5. Gasiorowska A, Fass R. Current approach to dysphagia. Gastroenterol Hepatol. 2009; 5(4):269-79.
6. Marks RD, Richter JE. Peptic strictures of the esophagus. Am J Gastroenterol. 1993; 88(8):1160-73.
7. Pasha SF, Acosta RD, Chandrasekhara V, et al. The role of endoscopy in the evaluation and management of dysphagia. Gastrointest Endosc. 2014;79(2):191-201.
8. Varadarajulu S, Eloubeidi MA, Patel RS, et al. The yield and the predictors of esophageal pathology when upper endoscopy is used for the initial evaluation of dysphagia. Gastrointest Endosc. 2005;61(7):804-8.
9. Kelly AM, Drinnan MJ, Leslie P. Assessing penetration and aspiration: how do videofluoroscopy and fiberoptic endoscopic evaluation of swallowing compare? Laryngoscope. 2007;117(10):1723-7.
10. Kelly AM, Leslie P, Beale T, et al. Fibreoptic endoscopic evaluation of swallowing and videofluoroscopy: does examination type influence perception of pharyngeal residue severity? Clin Otolaryngol. 2006;31(5):425-32.
11. Giraldo-Cadavid LF, Leal-Leaño LR, Leon-Basantes GA, et al. Accuracy of endoscopic and videofluoroscopic evaluations of swallowing for oropharyngeal dysphagia. Laryngoscope. 2017;127(9):2002-10.
12. Pandolfino JE, Kahrilas PJ, American Gastroenterological Association. AGA technical review on the clinical use of esophageal manometry. Gastroenterology. 2005;128(1):209-24.
13. Ghosh SK, Pandolfino JE, Zhang Q, et al. Deglutitive upper esophageal sphincter relaxation: a study of 75 volunteer subjects using solid-state high-resolution manometry. Am J Physiol Gastrointest Liver Physiol. 2006;291(3):G525-31.
14. Omari TI, Ciucci M, Gozdzikowska K, et al. High-Resolution Pharyngeal Manometry and Impedance: Protocols and Metrics-Recommendations of a High-Resolution Pharyngeal Manometry International Working Group. Dysphagia. 2020;35(2):281-95.
15. El-Serag HB, Sonnenberg A. Association of esophagitis and esophageal strictures with diseases treated with nonsteroidal anti-inflammatory drugs. Am J Gastroenterol. 1997;92(1):52-6.
16. Dhir V, Vege SS, Mohandas KM, Desai DC. Dilation of proximal esophageal strictures following therapy for head and neck cancer: experience with Savary Gilliard dilators. J Surg Oncol. 1996;63(3):187-90.
17. Bennett JR, Castell DO. Overview and symptom assessment. In: The Esophagus, Castell DO, Richter JE (Eds), Lippincott, Williams & Wilkins, Philadelphia 1999. p.33.
18. Haque S, Genta RM. Lymphocytic oesophagitis: clinicopathological aspects of an emerging condition. Gut. 2012;61(8):1108-14.
19. Palma R, Freire A, Freitas J, et al. Esophageal motility disorders in patients with Sjögren's syndrome. Dig Dis Sci. 1994;39(4):758-61.
20. Malagelada JR, Bazzoli F, Boeckxstaens G, et al. World gastroenterology organisation global guidelines: dysphagia--global guidelines and cascades update September 2014. J Clin Gastroenterol. 2015;49(5):370-8.
21. Clavé P, de Kraa M, Arreola V, et al. The effect of bolus viscosity on swallowing function in neurogenic dysphagia. Aliment Pharmacol Ther. 2006;24(9):1385-94.
22. Rofes L, Arreola V, Mukherjee R, Swanson J, Clavé P. The effects of a xanthan gum-based thickener on the swallowing function of patients with dysphagia. Aliment Pharmacol Ther. 2014;39(10):1169-79.
23. Kuhn MA, Belafsky PC. Management of cricopharyngeus muscle dysfunction. Otolaryngol Clin North Am. 2013;46(6):1087-99.
24. American Gastroenterological Association medical position statement on management of oropharyngeal dysphagia. Gastroenterology. 1999;116(2):452-4.