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DYSPHAGIA CAUSES AND MANAGEMENT, A REVIEW

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ABSTRACT

Dysphagia is the clinical expression of disruption of the synchronized activity surrounding the normal swallowing mechanism. It results from a large number of causes including neurologic, myopathic, metabolic, inflammatory/autoimmune, infectious, structural, iatrogenic, and psychiatric diseases.

It can have a significant impact on social and psychologic levels, as well as overall health, and is crucial to a patient's sense of well-being. Dysphagia is very common and is presently considered an alarm symptom that requires immediate attention. This article reviews current literature on the subject and summarizes the state of knowledge regarding the prevalence, classification, identification, management, and treatment of this condition.

KEYWORDS

Dysphagia,cause ,management

Introduction

Swallowing is a complex, continuous, and synchronous sensorimotor activity that smoothly and speedily transports ingested material and saliva from the oral cavity into the stomach (Dodds, 1989; Humbert et al., 2009; Miller, 1982). It depends upon a hierarchical interaction between the cerebral cortex, the brainstem swallowing center, and cranial nerves V (trigeminal), VII (facial), IX (glossopharyngeal), X (vagus), and XII (hypoglossal) (Broussard & Altschuler, 2000; Jean, 1990). The process of swallowing has both volitional and reflexive components reflecting central pathways within swallowing centers in the cortex and brainstem, respectively; but swallowing is highly dependent on sensory feedback, both for its initiation and modulation during the patterned sequence of neuromuscular events (Jean & Car, 1979; Leonard & Kendall, 2007; Matsuo &Palmer, 2008). Any diseases or injuries affecting the brain or nervous system, as well as any medical conditions resulting in structural/mechanical changes to the face, jaw, mouth, tongue, or neck may have a negative impact on the individual's ability to swallow (dysphagia) (Canadian Association of Speech-Language Pathologists and Audiologists, 2007; Hamdy, Aziz, Thompson,& Rothwell, 2001; Miller, 1999). For descriptive purposes, swallowing is divided into four phases (Dodds, Stewart, & Logemann, 1990; Logemann, 1998): preparatory (the food is chewed and prepared for swallowing), oral (the tongue pushes the food or liquid to the back of the mouth), pharyngeal (the swallow is triggered and the food or liquid is moved into the pharynx), and esophageal (the food or liquid enters the esophagus and is carried into the stomach). The term dysphagia derives from the Greek roots *dys* (with difficulty) and *phagia* (to eat). Although classified under "symptoms and signs" in the International Classification of Diseases-10 (ICD-10; World Health Organization, 2006), the term is sometimes used as a condition in its own right (Boczko, 2006, Cichero, 2006). Dysphagia affects people of all ages from pediatrics (Lefton-Greif, 2008; Rogers, 1996) to geriatrics (Humbert & Robbins, 2008; Nilsson, Ekberg, Olsson, & Hindfelt, 1996).

Dysphagia is a symptom of swallowing dysfunction that occurs between the mouth and the stomach. The dysphagia may be due to various causes.Although oropharyngeal dysphagia is a highly prevalent condition (occurring in up to 50% of elderly people and 50% of patients with neurological conditions) and is associated with aspiration, severe nutritional and respiratory complications and even death, most patients are not diagnosed and do not receive any treatment. Oropharyngeal dysphagia is a highly prevalent condition in three main at-risk populations: elderly people, patients with neurological or neurodegenerative diseases, and patients with head and/or neck diseases. Oropharyngeal dysphagia is associated with reduced pharyngolaryngeal sensitivity, damage of cortical areas or the swallowing centre in the central nervous system, and/or impaired efferent neural or muscular drive.. By contrast, oesophageal dysphagia is less prevalent and less severe, but with better recognized symptoms caused by diseases affecting the enteric nervous system and/or oesophageal muscular layers. Oesophageal dysphagia is usually caused by primary or secondary oesophageal motility disorders that affect the enteric nervous system or the oesophageal muscular layers. Recognition of the clinical relevance and complications of oesophageal and oropharyngeal dysphagia is growing among health-care professionals in many fields. In addition, the emergence of new methods to screen and assess swallow function at both the oropharynx and oesophagus, and marked advances in understanding the pathophysiology of these conditions, is paving the way for a new era of intensive research and active therapeutic strategies for affected patients. Indeed, a unified field of deglutology is developing, with new professional profiles to cover the needs of all patients with dysphagia in a nonfragmented way.Advances in research and technology are paving the way for intensive research and active therapeutic strategies for affected patients, and a transdisciplinary field of deglutology

Dysphagia is classified into the following major types:

1. Oropharyngeal dysphagia
2. Esophageal dysphagia
3. Complex neuromuscular disorders
4. Functional dysphagia

Through research and technological advances, we continue to expand our understanding of the etiologies and underlying pathophysiology relating to dysphagia. However, for now, our clinical algorithms focus on endoscopy and manometry to break down dysphagia into three categories:

obstructive dysphagia, esophageal motility disorders, and functional dysphagia.

Pathophysiology

Swallowing is a complex process and many disturbances in oropharyngeal and esophageal physiology including neurologic deficits, obstruction, fibrosis, structural damage or congenital and developmental conditions can result in dysphagia. Breathing difficulties can sometimes affect the ability to swallow. Some causes of dysphagia are explained here.

Causes of oral dysphagia

Various reasons for this type of dysphagia can be :

- Bad teeth
- Problems with the jaw

- Xerostomia - dry mouth
- Tumors - cavum oris cancer, pharyngeal or laryngeal cancer
- Masses outside the pharynx, such as osteophytosis on the vertebrae that press on pharynx
- Complication of head or neck surgery
- Radiation leading to fibrosis, structural, mechanical, and neurologic deficits
- Stroke or some neurological disease like Parkinson's disease, multiple sclerosis or ALS
- Scleroderma - a rheumatic disease leading to a thickening, fibrosis and scarring of tissue
- Immune system diseases such as polymyositis
- Cricopharyngeal dysfunction- can result in material remaining in posterior pharynx with risk of aspiration of material into the airway after the swallow
- Age-related changes in swallow function

Causes of esophageal dysphagia

Diseases that can cause esophageal dysphagia can be grouped into different categories. Diseases that narrow the esophageal lumen through inflammation, fibrosis, or tumors, diseases that compromise the esophageal lumen, and diseases that disrupt esophageal peristalsis and/or lower esophageal sphincter function by their effects on esophageal smooth muscle :

- Gastroesophageal reflux disease
- Esophagitis-can be caused by different problems, such as infections
- Eosinophilic esophagitis
- Esophageal spasm
- Achalasia-muscles in the esophagus lose their ability to relax and open
- Diverticula
- Tumors in the esophagus
- Masses outside the esophagus, such as tumors and osteophytosis on the vertebrae
- Radiotherapy treatment that causes stricture, fibrosis and stenosis
- Scleroderma-a rare condition that causes stiffening of the esophagus muscle
- Immune system diseases such as polymyositis
- Age-related changes

Causes of dysphagia in patient with complex neuromuscular disorder Damage to the neuromuscular system can interfere with the nerves responsible for starting and controlling swallowing. Some neurological causes of dysphagia include :

- Stroke
- Neurological conditions that cause damage to the brain and nervous system, including Parkinson's disease, multiple sclerosis, motor neuron disease
- Myasthenia gravis-that causes the muscles to become weak
- Dementia
- Brain tumor

Functional dysphagia

Functional dysphagia, defined in some patients as having no organic cause for dysphagia that can be found. There are several different causes to functional dysphagia :

- Post traumatic syndrome stress disorder
- Stress attack
- Anxiety
- Different psychosocial disorders

Symptoms and signs

Signs and symptoms associated with dysphagia may include:

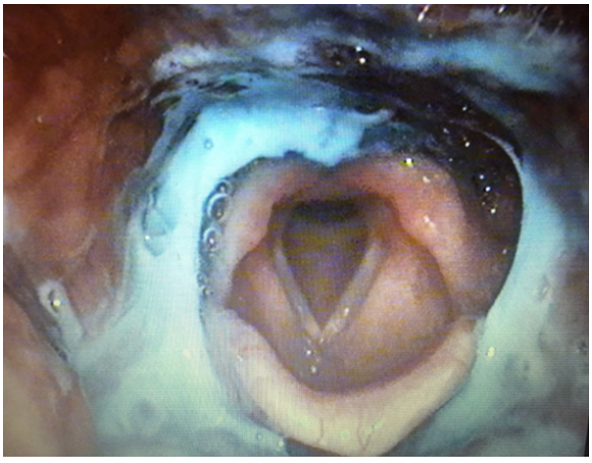
- Salvia, food, liquid, or pills are sticking in the throat
- Coughing or choking food or liquid
- Sensing of a "lump" in the throat
- Having the sensation of food getting stuck behind sternum
- Wet voice
- Bringing food back up (regurgitation)
- Having food or stomach acid back up into the throat
- Unexpected weight loss
- Pain
- Developing aspirations pneumonia

Ddiagnosis

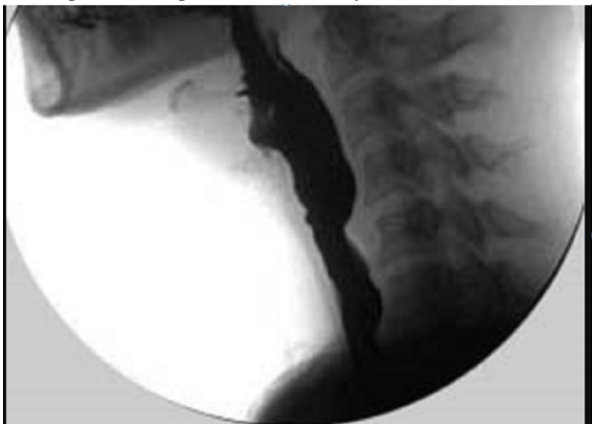
If the presence of dysphagia is suspected, a more comprehensive clinical noninstrumental evaluation is administered called *bedside examination* (e.g., case history, review of medical/clinical records, assessment protocols and observations) (Ramsey, Smithard, & Kalra, 2003;Smith & Connolly, 2003; Sitoh, Lee, Phua, Lieu, & Chan, 2000). As described by the American Speech-Language-Hearing Association (2000), this procedure contains a structural and functional assessment of the muscles and structures used in swallowing, a functional assessment of actual swallowing ability, and judgments of adequacy of airway protection and coordination of respiration and swallowing. The procedure may also embody an assessment of the effect of alterations in bolus delivery or use of therapeutic postures or maneuvers on the swallow. In addition, it may comprise use of tools and techniques (such as cervical auscultation and pulse oximetry) to detect and monitor clinical signs of dysphagia.

When the dysphagia is frequent, and the cause is not clear, a comprehensive evaluation of dysphagia should include several medical disciplines including ENT doctors, gastroenterologist, occupational therapist, speech pathologist and dietitian. An examination begins with a clinical examination that includes a detailed history of subjective complaints and medical status. The ENT specialist will examine the mouth and throat and with flexible laryngoscope through the nose examine the throat in greater detail . Results from the bedside examination may indicate the need for further testing with instrumentation (e.g., fluoroscopy, endoscopy, ultrasound, and manometry).

The most widely used procedure is a videofluoroscopic assessment of swallowing and fiber-optic endoscopic evaluation of swallowing (FEES) . Videofluoroscopy describes X-rays records and shows how food and liquids move down, and helps to evaluate the entire swallowing process, the anatomy changes and dynamics of the swallow, identify the etiology of residue, penetration and aspiration, and assess the benefit of treatment strategies during the study. FEES consist of passing a thin, flexible endoscope into the pharynx and observing the act of swallowing. It provides excellent visualization of anatomical changes and identifies the etiology of residue, penetration and aspiration. Videofluoroscopy and FEES is thought to be the "gold standard" for assessment of in oropharyngeal dysphagia .



Fibre-optic endoscopic evaluation of larynx (FEES)



Videofluoroscopic assessment of swallowing

Management of dysphagia

Management of dysphagia, aimed at providing adequate nutrition to a patient in the safest, most efficient way, often requires that individuals learn a range of feeding exercises, maneuvers, strategies, or alternative feeding methods to ensure adequate alimentation and safe swallowing (Logemann, 2008; Tippett, Palmer, & Linden, 1987). These procedures—based on the history, findings of the clinical investigations, and prognosis for the individual patient and intended to improve his/her functional status, health status, or quality of life—can be classified into either compensatory (indirect) or active (direct) methods (Carnaby-Mann, Lenius, & Crary, 2007;

Logemann, 1998; Siebens & Linden, 1985). Compensatory procedures are those aimed at eliminating the symptoms of dysphagia without directly altering the swallowing physiology (e.g., head, chin, neck and trunk postural adjustments, modifications of bolus size, and/or consistency and sensory enhancement techniques prior to or during the swallow). Active procedures are those pointed at modifying the swallowing physiology. They require direct participation by the patient (e.g., effort-full swallow, supraglottic swallow, super supraglottic swallow, Mendelsohn's maneuver, and diet modification). Management of dysphagia requires involvement of members of a multidisciplinary team including speech and language pathologists, occupational therapists, physiotherapists, dieticians, and nursing and medical staff (Kirker & Oliver, 2003; Leslie, Carding, & Wilson, 2003).

Treatment usually depends on the cause and type of dysphagia. Many cases of dysphagia can be improved with careful management, but a cure is not always possible . Successful management requires multidisciplinary collaboration, accurate diagnostic workup and effective therapeutic strategies. Treatments for dysphagia include occupational therapist or speech and language therapy to learn new swallowing techniques, using texture modified foods and thickened fluids, changing the consistency of food and liquids to make them safer to swallow and in sometimes other forms of feeding – such as tube feeding through the nose or stomach . Treatment to rehabilitate swallowing function and compensation techniques are common pathways for managing some cases of dysphagia . Surgery is used in patients who have some changes (such as a tumor or diverticula) blocking the pharynx or esophagus or patients who have a problem that affects the lower esophageal muscle. Dilation is used to expand any narrow areas of the esophagus . If dysphagia is related to GERD or esophagitis, medicines may help prevent stomach acid from entering the esophagus. Infections in pharynx, larynx and esophagus are often treated with antibiotic medicines. Botox injection of cricopharyngeus muscle and esophagus is used to treat dysphagia in patients with underlying muscle spasm and hypertonicity .

Complication of dysphagia

The most common complications of dysphagia are pulmonary complications, dehydration and malnutrition. Other possible complications, such as social isolation, mental and emotional health issues or intellectual and body development deficit in children with dysphagia, have not been studied thoroughly. The main pulmonary complications are aspiration pneumonia, toxic aspiration syndromes and pulmonary fibrosis .

Conclusion

Dysphagia is an impairment of the complex swallowing function that may involve any structures from the lips to the gastric cardia. It can be caused by a multitude of underlying medical diseases and a handful of psychiatric conditions or psychological problems. The medical implications of dysphagia are more readily quantifiable than their social and behavioral counterparts. Dysphagia is a significant, yet under recognized, public health issue, which is in need of proper attention immediately. Given the prevalence and consequences of dysphagia, accurate identification, effective management, and optimal treatment are worth pursuing. Attention to cultural issues on dysphagia service delivery optimizes the opportunities for successful outcomes and better meets the needs of patients from culturally diverse backgrounds. Nevertheless, the evidence supporting current evaluations and treatments for dysphagia is inadequate and requires further research and refinement. Future properly controlled, randomized, large-scale studies with blinded assessment in certain aspects of dysphagia by teams of investigators from different disciplines working at the intersections of their fields are strongly indicated.

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