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Dysphagia: what we know? A minireview

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Dysphagia refers either to the difficulty someone may have with the initial phases of a swallow (usually described as oropharyngeal dysphagia, "OD") or to the sensation that foods and or liquids are somehow being obstructed in their passage from the mouth to the stomach (usually described as "esophageal dysphagia"). In patients with no indication of a somatic disease or abnormality, psychiatric conditions must be considered as a possible cause of OD. Moreover, diagnosis and treatment of dysphagia are not standardized. There is no universal standard tool for screening or clinical assessment of OD. Education of health professionals on early diagnosis and improvement of therapeutic strategies are mainstays to allow maximal recovery potential in this population. Future studies, clinical trials, clinical evidence and clear guidelines are needed to manage this condition.

Key words: dysphagia, oropharyngeal dysphagia, causes, guideline, management, elderly

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INTRODUCTION

Dysphagia refers either to the difficulty someone may have with the initial phases of a swallow (usually described as oropharyngeal dysphagia, "OD") or to the sensation that foods and or liquids are somehow being obstructed in their passage from the mouth to the stomach (usually described as "esophageal dysphagia") [1]. It is positive in 12.4% after extubation (18.3% of emergency and 4.9% of elective patients) [2]. The prevalence of OD has been calculated in older people across different setting, with rates between 30 and 40% in geriatric acute care unit [3,4]. It may be more common in an acute hospital setting because patients often have multiple medical comorbidities. In particular, it observed predominantly in patients with an altered mental status [5]. Well-established risk factors for dysphagia include advanced age, neurological disease, head-neck cancer and pulmonary disease [6]. However, Giordano et al, have been reported that in an octogenarian, the only clinical symptoms of generalized tetanus, dysphagia and tremor [7]. It has been reported that isolated bulbar symptoms, as dysphagia, in elderly, may be included in the differential diagnosis [8]. To this regard, the European Society for swallowing disorders-European Union Geriatric Medicine Society describe that dysphagia can cause severe complications such as malnutrition, dehydration, respiratory infections, aspiration/pneumonia and increased readmissions, institutionalization and mortality. In fact, OD is a prevalent and serious problem in older patients. Oro-pharyngeal swallow response is impaired in older people and can

cause aspiration [9]. Despite its prevalence and severity, OD is still underdiagnosed and untreated in many medical centers.

The present minireview highlights the importance of considering crucial causes among the possible expression and cause of dysphagia.

METHODS

Clinical trials were identified by PubMed until June 30 2020. The search keywords were "dysphagia, elderly, OD". The studies were selected, their references were reviewed for potential inclusion. Studies written in languages other than English were excluded. Three authors (T.C., G.S., and O.P.) reviewed all study abstracts. Studies were included if analyzed dysphagia in elderly patients All selected studies are qualitatively analyzed.

ETIOPATHOGENESIS

Dysphagia can be related to gastrointestinal or not gastrointestinal causes, as reported in Table I.

Gastrointestinal causes

Eosinophilic esophagitis

Esophageal food bolus impaction is an acute multidisciplinary common emergency, frequently observed in the Emergency Department [10]. The estimated annual incidence rate is 13 per 100,000 persons after upper and lower gastrointestinal bleeding [11]. The most common presentation of food bolus impaction in the Western countries are the "steakhouse syndrome", so called because the meats represent the most frequently impacted foods [12]. Several abnormalities of esophageal mucosal and neuromuscular layers, as well as underlying diseases, including edentulism, eosinophilic esophagitis and esophageal stenosis (as peptic esophageal stricture or Schatzki's ring), facilitate food bolus impaction [13]. In particular, several studies suggest that eosinophilic esophagitis (EO) is an emergency cause of food bolus impaction and dysphagia in adult (Fig. 1) [14,15]. It has been reported that patients who present with food bolus impaction, have approximately 1 in 3 chance of having EO. According to a study, EO was found in 54% of patients presenting with food bolus impaction [16]. EO usually affects young adults with mean age 30 years old [14]. The exclusion of secondary causes of EO, the presence of mucosal eosinophilia being isolated to the esophagus and persisting after a proton pump inhibitor trial are also included in the diagnostic criteria for EO [17]. According to the current guidelines, EO is defined histologically with eosinophils count of 15 or more eosinophils/hpf.

Table I. Gastrointestinal and not gastrointestinal causes of dysphagia.

Causes	Prevalence (%)
Gastrointestinal	Eosinophilic esophagitis (30-54%) Reflux esophagitis (36%) Barrett' (10%) Other (30%) Achalasia (2%)
Not gastrointestinal	Post-stroke dysphagia (37-81%) Dementia (19-30%) M. Parkinson (35%) M. Alzheimer (57-84%)

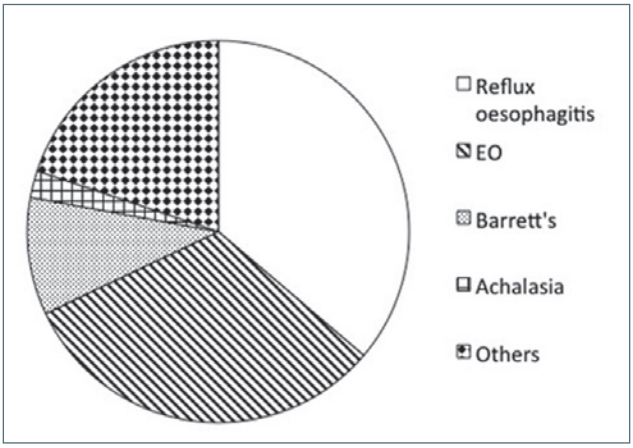

Figure 1. In this figure we describe the main gastrointestinal causes of dysphagia. Eosinophilic esophagitis (EO).

Esophageal motility disorders

More infrequently, esophageal motility disorders (as diffuse esophageal spasm) and other esophageal hypertensive dysmotility's, may represent a cause of food bolus impaction [18]. This multidisciplinary, as well as the plurality of underlying esophageal diseases, generate a high heterogeneity in its management, ranging from observational therapy to surgical treatment [19]. Although more than half of food bolus impaction will resolve spontaneously after a short observational period without any serious consequences, in 10-20% of cases a conservative or surgical management is required [20]. Several studies have been conducted on pharmacological and non-pharmacological agents for treatment of this issue. Pharmacological agents with enzymatic activity such as papain, trypsin and chymotrypsin are no longer recommended due to high risk of esophageal perforation and hypernatremia. In the same way, the administration of hyoscine butyl-bromide (Buscopan),

glucagon injection and diazepam resulted in no significant difference in compare to controls [21]. Better results were obtained by non-pharmacological effervescent agents (fizzy drinks). However, the level of evidence of these studies is too low to provide strong conclusions. The current treatment, recommended by American Society for Gastrointestinal Endoscopy (ASGE) include endoscopic food extraction and, only in some cases, the advancement of the bolus into the stomach under endoscopic guide [22]. With regards to the management of food bolus impaction, Ikenberry et al., recommended a time frame of 6 h to remove the food bolus due to the potential risk of ischemia, necrosis and perforation [23].

Achalasia

It is a relatively rare primary motor esophageal disorder, characterized by absence of relaxation of the lower esophageal sphincter and of peristalsis along the esophageal body. As a result, patients typically, present with dysphagia, regurgitation and occasionally chest pain. High resolution manometry is recommended for the diagnosis of the esophageal achalasia (GRADE recommendation: low). It is recommended to perform endoscopy to exclude neoplastic pseudo-achalasia (Good practice recommendation). There is no convincing evidence that medical treatment with nitrates or calcium blocker or phosphodiesterase inhibitors is effective for symptomatic relief in adult with achalasia. Treatment of achalasia with peroral endoscopic myotomy (POEM) results in similar outcomes on swallowing functions compared with alternative treatment [24].

Non-gastrointestinal causes

Post-stroke dysphagia

Dysphagia is a common complication after stroke with a prevalence to vary from 51 to 65% of patients. Many of them are asymptomatic or have symptoms that aren't related to swallowing problems. Although many patients recover swallowing spontaneously, 11-50% still have dysphagia at 6 months [25,26]. Post-stroke dysphagia (PSD) is associated with a poor outcome for multiple reasons:

- it is a manifestation of severe stroke and it is associated with increased death, dependency, disability, impairment and institutionalization;
- it causes aspiration of foods, liquids and oral secretions and therefore pneumonia [27,28], which in itself leads to death;
- however, poor recognition and management leads to dehydration and malnutrition [29].

Although multiple advances have been made in the early management of stroke (e.g. with thrombolysis, aspirin, mechanical thrombectomy and hemicraniectomy) and secondary prevention (e.g. with antithrombotic, blood pressure lowering, lipid lowering, carotid endarterectomy), PSD remains a neglected research area and its optimal management, including treatment, has yet to be defined. Nevertheless, guidelines recommend assessment of swallowing within 24h after stroke [1]. In respect of drug treatment, a small pilot randomized trial suggested that nifedipine (a calcium channel blocker that relaxes esophageal smooth muscle) might improve swallowing, and metoclopramide (a dopamine D2-receptor antagonist with antiemetic and gastric prokinetic activity) might reduce the incidence of pneumonia [25]. Glyceryl trinitrate (GTN), given within 6h of stroke, was associated with improved functional outcome [30,31]. In fact, GTN might also improve swallowing though relaxing esophageal smooth muscle [32-34].

Medically unexplained oropharyngeal dysphagia (MUNOD)

Rarely, OD occurs without demonstrable abnormalities in the anatomy of the upper aero-digestive tract and/or swallowing physiology, prompting a diagnosis of *medically unexplained oropharyngeal dysphagia (MUNOD)*. Functional somatic disorders and comorbid anxiety and depression are both associated with increased severity of symptoms and greater illness burden. According to the DSM-V classification, phagophobia belongs to the category of 'specific phobias' (26). Patients with phagophobia experience an abnormal sensation during swallowing, sometimes accompanied by behavioral abnormalities during swallowing examination [35].

MANAGEMENT

Thus, patients with a food bolus impaction in the emergency department should receive a clinical and instrumental assessment with chest radiograph to rule out evidence of perforation or a radiopaque object in the esophagus (Fig. 2). Once a foreign object is ruled out, endoscopy should be considered [36]. The food bolus can be removed during upper endoscopy and is successful in 98% of patients during the first endoscopy [37]. A recent review explored the level of evidence and classified the types of interventions into the following categories:

- bolus modification and management;
- swallow postures and maneuvers;
- other interventions (as oral hygiene, feeding);
- facilitation techniques.

Bolus modifications

The modification of the consistence of solids and or liquids is the main element of compensatory treatment for

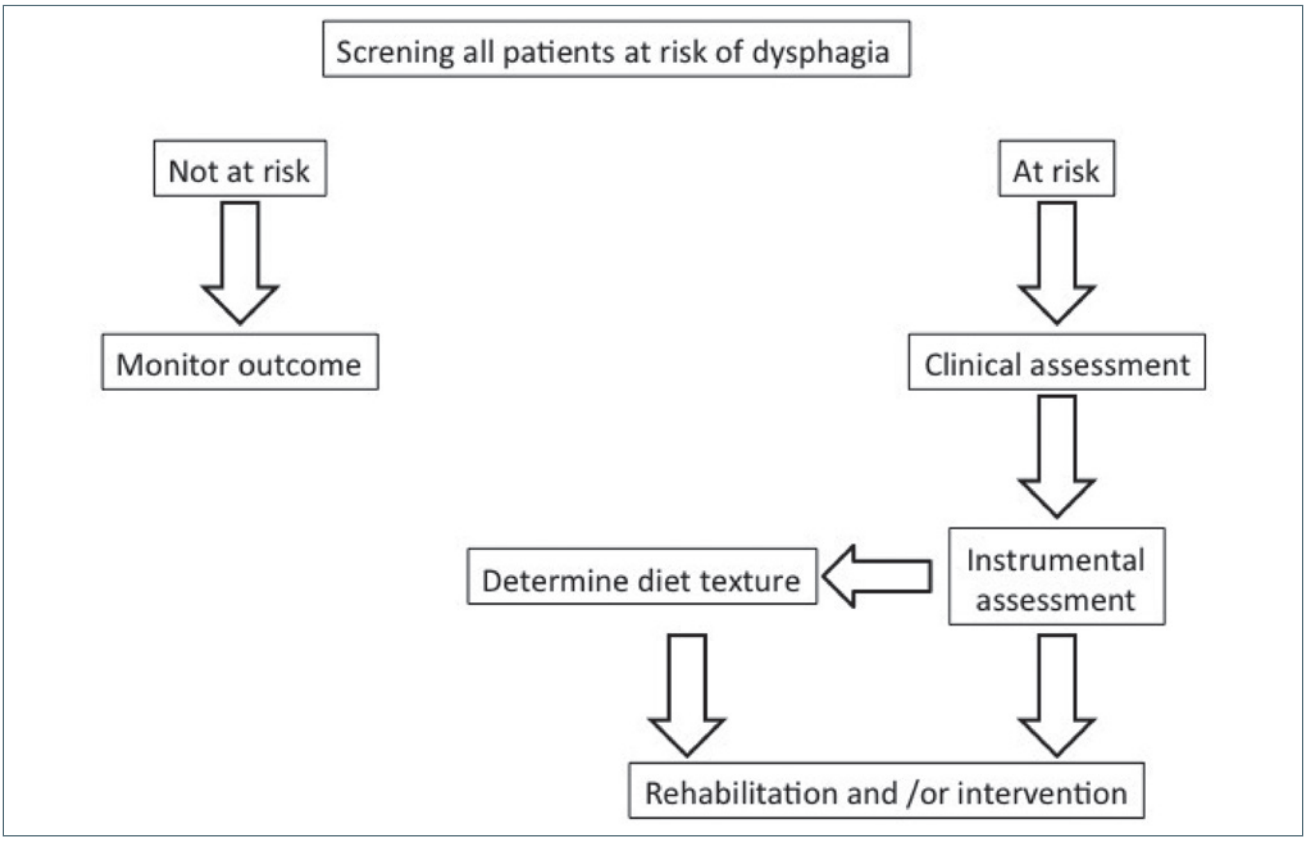

Figure 2. In this figure we describe the algorithm to use for the management of the dysphagia.

patients suffering from OD. The level of evidence with this treatment is A (randomized controlled trials) and B (non-randomized trials) [38].

Swallow posture

A general directive is to swallow in an upright position (90 seated) and to maintain this posture after the meal for at least 30 minutes. Generally, level of evidence for maneuvers or other posture is B [38].

Oral hygiene

Deficient oral hygiene is a risk factor for pneumonia in older patients with OD [39]. Minimal oral hygiene should be performed every 12 hours to avoid dental plaque formation [40]. Mouthwashes should be used at least every 3 days, chlorhexidine being the most effective but it should not be used for > 15 days [41].

Nutritional status

Nutritional status is basic to good health and an important part of treatment of many chronic diseases. The relationship between malnutrition and OD has been established. It has been recommended that patients following modified texture diet or being given enteral feeding for OD should have their swallowing and nutritional status regularly assessed, after the first week and then every 2 or 3 months for the first years and after every 6 months [42].

Oral nutritional supplement should be provided in patients with:

- anorexia;
- dietary restriction due to chronic disease;
- nutritional intake < 75% of their nutritional requirements;
- involuntary weight loss.

Nutritional interventions include different strategies such as adaptation of the diet and enteral nutrition, administered by nasogastric tube (NGT) or percutaneous endoscopic gastrostomy (PEG) and should be based on the nutritional needs.

NGT is recommended for short periods of time (< 2 months) and when there is no risk of gastro esophageal reflux. It is reported for the care of the patients with amyotrophic lateral sclerosis [43].

PEG is most commonly used and it can be inserted by endoscopy or surgery. Carrau et al., reported the use of laryngeal framework surgery for the effective treatment of aspiration in selected patients (such as with deficits of the glottic closure secondary to vocal fold paralysis or paresis) [44]. PEG may cause an enhanced risk of gastro

esophageal reflux disease (GERD) with increased risk of aspiration [45]. The recommendations by Wirth et al., underline the importance of an early screening and assessment of dysphagia and give advice for an evidence based and comprehensive nutritional management to avoid aspiration, malnutrition and dehydration [46].

Facilitation techniques

In recent years, new treatment based on stimulation or sensorial and motor pathways are being assessed. Neuromuscular electrical stimulation therapy (NMES) stimulates deglution nerves and muscles to improve OD. The main target nerves are the superior laryngeal nerve, the pharyngeal branch of the glossopharyngeal nerve and two branches of the vagus nerve, the pharyngeal branch and the maxillary branch of the trigeminal nerve. Guidelines on the NMES have been published by the British National Institute for Health and Care Excellence giving recommendation. The evidence on safety is limited in quality and quantity. In patients with PSD, treatment with transcutaneous NMES increased prevalence of safe swallows and reduced the time of the laryngeal vestibule closure (LVC) [47].

Other evaluation

In addition, MUNOD is a rare condition that is difficult to diagnose. Patients deserve a professional approach, particularly because their diagnostic trajectory has often been long and inconclusive. Affective symptoms are common in these patients. MUNOD could be a symptom of a psychiatric condition or part of the alarm falsification defense system, suggesting that physical symptoms and affective disorders are stress-related and a response to earlier threats. Consultation of a psychiatrist for patients with MUNOD is recommended as part of a pathway toward multidisciplinary integrated care [35]. In patients with prolonged dysphagia, with no indication of a somatic disease or abnormality, psychiatric conditions must be considered as a possible cause of OD. Validated psychological screening questionnaires could be helpful in the detection of affective conditions but also of other psychiatric conditions. Involvement of a psychiatrist and/or psychologist is recommended.

DISCUSSION

The present review describes the gastrointestinal and not gastrointestinal causes of dysphagia.

Due to its prognostic importance, an early detection of causes related dysphagia and a suitable nutritional management is therefore of utmost clinical importance [46]. A formalized screening for dysphagia should be carried out in all patients as part of the initial examination or upon arrival of the patient on the hospital ward. To this regard, several studies reported associations between a pathological dysphagia screening and an increased incidence of pneumonia [48] as well as a reduction of infectious complications after implementation of a systematic screening [49]. Unfortunately, despite its prevalence and severity, dysphagia is still underdiagnosed and undertreated in many medical centers. Moreover, diagnosis and treatment of dysphagia are not standardized. There is no universal standard tool for screening or clinical assessment of OD. Education of health professionals on early diagnosis and improvement of therapeutic strategies are mainstays to allow maximal recovery potential in this population [50].

Current treatment of OD is usually compensatory, rehabilitative or a combination of the two. Future studies, clinical trials, clinical evidence and clear guidelines are needed to manage this condition.

Ethical consideration

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Conflict of interest

The Authors declare no conflict of interest.

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