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REVIEW

DYSPHAGIA – A SHORT REVIEW

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Abstract. Dysphagia is defined as a feeling of "stiffness" or of obstruction of the passing food through the oral cavity, pharynx and esophagus. A physiologic deglutition involves many security mechanisms through which the food bowl passes from oral cavity only in the pharynx and esophagus. Dysphagia can be classified in oropharyngeal and esophageal depending of the location or it can be mechanical ormotor if we consider the cause. The anamnesis may provide an accurate presumptive diagnosis in more than 80% from cases. Therefore the type of food that leads to dysphagia,the duration, the localization and the related symptoms can also bring important diagnostic clues. All patients with dysphagia must be carefully investigated due to the fact that the course of treatment depends on the main determining cause.

Keywords: mechanical dysphagia, motor dysphagia, deglutitiondisorder,oropharingeal dysphagia, esophageal dysphagia

Introduction

Dysphagia is defined as a feeling of" sticking" or of obstruction of the passing foodthrough the oralcavity, pharynx and esophagus.[2] In USA approximate 10 millions people are evaluated each year for deglutition disorders, which has a drastic negative impact over theirlifes quality and is a significant cause of morbidity and mortality.[3]

Dysphagia should be distinguished from other symptoms related to swallowing.

Aphagia is the inability or refusal to swallow.

Difficulty in initiating a swallow occurs in disorders of the voluntary phase of swallowing. However, once initiated, swallowing is completed normally.

Odynophagia means painful swallowing. Frequently, odynophagia and dysphagia occurs together.

Globus pharyngeous is the sensation of a lump in throat. However, no difficulty is encountered when swallowing is performed.

Misdirection of food, resulting in nasal regurgitation and laryngeal and pulmonary aspiration of food during swallowing is characteristic of oropharyngeal dysphagia.

Phagophagia meaning fear of swallowing, and refusal to swallow may occur in hysteria, rabies, tetanus, and pharyngeal paralysis due to fear of aspiration.[2]

Dysphagia can be classified in oropharyngeal and esophageal dysphagia depending on the location.

The oropharyngeal dysphagia is the difficulty of the food bowl passing from oropharynx thru esophagus. This can occur in case of functional disorders at the upper level of the esophagus. A wrong directing of the food can cause nasal regurgitation and laryngeal or pulmonary aspiration during the deglutition, characteristic for the oropharyngeal dysphagia. Most likely this can be found in patients with neurological or muscular disorders which affect the skeleton-like muscles.[6]

Oropharyngeal dysphagia is a highly prevalent and growing condition in the older population. Although oropharyngeal dysphagia may cause very severe complications, it is often not detected, explored, and treated. Older patients are frequently unaware of their swallowing dysfunction which is one of the reasons why the consequences of oropharyngeal dysphagia, aspiration, dehydration, and malnutrition, are regularly not attributed to dysphagia. Older patients are particularly vulnerable to dysphagia because multiple age-related changes increase the risk of dysphagia. Physicians in charge of older patients should be aware that malnutrition, dehydration, and pneumonia are frequently caused by unrecognized dysphagia. The diagnosis is particularly difficult in the case of silent aspiration.[8]

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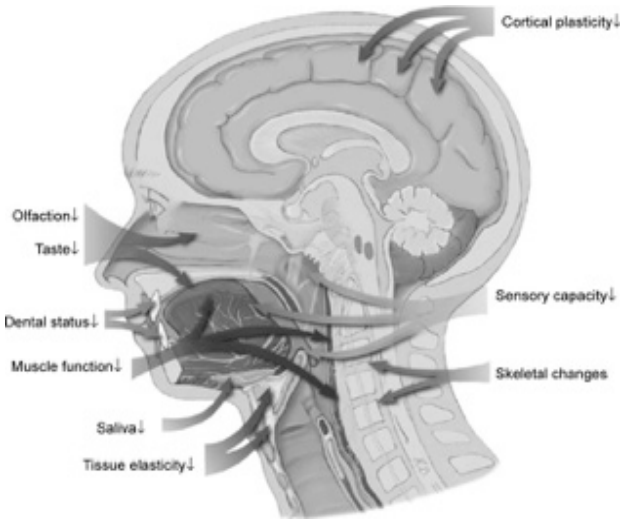

Fig.1. Factors associated with dysphagia in older persons [8]

The esophageal dysphagia represents the difficulty of advancing the food in the esophagus because an obstruction or motility disorders. Motility diseases produce dysphagia by bad functioning of the esophagus which involves the smooth esophageal muscles, namely the inhibition of the esophageal peristalsis and of the lower esophageal sphincter functionality [4].

Physiology of deglutition

Deglutition involves many security mechanisms through which the food bowl passes from oral cavity only in the pharynx and esophagus:

- approaching of the lateral pillars and elevating the posterior part of the tongue prevents the return of the food bowl in the oral cavity;
- simultaneous contractions of the lateral pillars and the lift of the soft palate and of the uvula prevents the entrance of the food in nasal cavity;
- theentering of the food in the larynx and trachea is prevented thru the elevation of the larynx, the descent of the epiglottis, the contraction of the vocal folds which shut the glottis,all of these being accompanied by the inhibition of the respiratory cycle (Figure 2). [2]

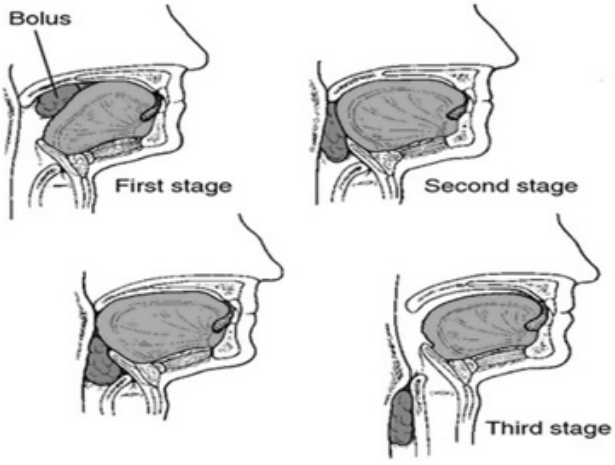

Fig. 2. Physiology of deglutition [9]

Physiopathology of dysphagia

The normal transport of the ingested bolus thru the swallowing passage depends on the size of the ingested bolus, the diameterof the deglutition path's lumen, the peristaltic contraction and the deglutitive inhibition, including normal relaxation of the upper and lower esophageal sphincters during the deglutition act.[2]

Causes of dysphagia

The dysphagia produced by a large food bowl or by a narrowing of the lumen is called mechanical dysphagia, whereas the dysphagia caused by the incoordination or by the decreased peristaltic contractions or even by deglutitive inhibition is the motor dysphagia.

Mechanical dysphagia may be caused by very large food bolus, by an intrinsic narrowing or by an extrinsic compression of the lumen. The esophageal lumen of an adult may expand up to 4 cm due to the elasticity of the esophageal wall. The dysphagia for solids may appear when the esophagus can expand to only 2.5 cm diameter and it is always present when the esophagus cannot expand more than 1.3 cm. The circumferentially lesions determine a more severe dysphagia then the ones which affect only a part of the esophageal wall's circumference, because the unaffected sections preserve their distensibility. Most common causes are: carcinomas, peptic stricture, spasm and diverticulum esophageal.

Motor dysphagia may result from difficulty in initiating a swallow or from abnormalities in peristalsis and deglutitive inhibition due to disease of the esophageal striated or smooth muscle.[2]

Striated muscle diseases affect the pharynx, the upper esophageal sphincter and the cervical esophagus. The striated muscles are innervated by a somatic part of the vagus nerve, having the inferior motor neurons cell bodies located in the nucleus ambiguous. These neurons are cholinergic, they have an excitatory function and they are the exclusive determinants of the muscle activity.

Motor dysphagia of the pharynx occurs due to neuromuscular disorders which lead to muscle paralysis, simultaneous non-peristalsis contractions or the loss of the ability to open the superior esophageal sphincter. The latter is determined by the geniohyoid muscle paralysis, the paralysis of other suprahyoid muscles or due to the loss of the deglutition inhibition of the cricopharyngeal muscle, because every part of the pharynx is innervated by the same ipsilateral nerves, therefore a lesion of the motor neurons which affects one part of the pharynx can lead to unilateral paralysis of the pharynx. Although the lesions of the striated muscles involve also the cervical part of the esophagus, clinical manifestation of the pharyngeal disorders usually mask the symptoms caused by the esophageal disorders. The most important causes are: pharyngeal paralysis, achalasia, scleroderma, diffuse esophageal spasm and other neuromuscular disorders associated.[2]

For example motor dysphagia can be encoutered in Duchenne muscular dystrophy (DMD), which is a rapidly progressive neuromuscular disorder causing weakness of the skeletal, respiratory, cardiac and oropharyngeal muscles with up to one third of young

men reporting difficulty swallowing (dysphagia). Difficulty swallowing can worsen the condition of ageing patients with DMD. Symptoms of dysphagia must be actively sought and investigated. Food can penetrate the vestibule, accumulate as residue in the piriform sinus or cause subglottic aspiration. In the case of penetration and accumulation of residue, solid, minced and mashed food should be prohibited and fluids and purees should be promoted.[7]

Mechanical causes of dysphagia

I. Luminal
- A. Large bolus
- B. Unknown object

II. Inherent narrowing
- A. Inflamatory disorder causing edema and swelling
  - 1. Stomatitis
  - 2. Pharyngitis, epiglottitis
  - 3. Esophagitis(viruses- herpes simplex, varicella-zoster, CMV; bacterial;mycotic; caustic injury, chemical burn, thermal burn)
- B. Web and ring
  - 1.Pharyngeal(Plummer-Vinson syndrome)
  - 2.Oesophageal (inflammatory)
  - 3. Schatzki ring
- C. Benign stricture
  - 1. Peptic
  - 2. Caustic, drug-induced
  - 3. Inflammatory(Crohn's disease, candidiasis, mucocutaneous lesions)
  - 4. Ischemic
  - 5. Postoperative, irradiation
- D. Malignant tumour
  - 1. Primary carcinoma (squamous cell carcinoma, adenocarcinoma, pseudosarcom, lymphoma, melanoma, Kaposi's sarcoma)
  - 2. Metastatic carcinoma
- E. Benign tumour
  - 1. Leiomyoma
  - 2. Lipoma
  - 3. Angioma
  - 4. Inflammatory fibroid polyp
  - 5. Papiloma

III. Extrinsec compression
- A. Cervical spondylosis
- B. Vertebral osteophytosis
- C. Retropharyngeal (abscess, tumor)
- D. Enlarged thyroid gland
- E. Zenker diverticulum
- F. Vascular compression
- G. Posterior mediastinal mass
- H. Postvagotomy hematoma/fibrosis

Neuromuscular causes of dysphagia

I. Difficulty in swallowing
- A.Tongue paralysis
- B.Oropharyngeal anesthesia
- C. Dry mouth (Sjögren's syndrome)
- D. Injury to sensitive components, glossopharyngeal and vag nerves
- E. Injury to swallowing center

II. Disorders of pharyngeal and esophageal striated muscles
- A. Muscular weakness
  - 1.Lower motor neuron lesion (stroke, motor neuron disease, polyneuritis, amyotrophic lateral sclerosis)
  - 2.Neuromuscular
  - 3. Muscle disorders (polymyositis, dematomyositis, myopathies)
- B. Impaired swallowing inhibition
  - 1. Pharyngitis and upper esophagus (rabies, tetanus, extrapyramidal disease, injuries of upper motor neuron)
  - 2. Upper esophageal sphincter (paralysis of the suprahyoid muscles, achalasia cricopharyngeal)

III. Esophageal smooth muscle disorders:
- A. Paralysis causing esophageal body contraction weak
  - 1. Scleroderma
  - 2. Hollow visceral myopathy
  - 3. Myotonic dystrophies
  - 4. Metabolic myopathy
  - 5. Achalasia
- B Impaired swallowing inhibition
  - 1. Esophageal body (diffuse esophageal spasm, vigorousachalasia, diffuse esophageal spasm variants)
  - 2. Lower esophageal sphincter
    - a. Achalazie
      - (1) Primary
      - (2) Secondary
        - Chagas disease
        - Carcinoma
        - Lymphoma
        - Toxins and drugs
    - b. Lower esophageal muscular ring

Tabel I. Causes of dysphagia [2]

Approach to the patient with dysphagia

Dysphagia may have many meanings and therefore a careful anamnesis is necessary in order to diagnose the right problem.[4]

The esophagus being inaccessible by palpation the history can provide a presumptive diagnosis in over 80% of patients.[5]

The type of food that leads to dysphagia offers helpful information. The difficulty only to solids implies mechanical dysphagia with a lumen that is not severely narrowed, but in an advanced obstruction the dysphagia is to solids and also to liquids. Otherwise the motor dysphagia due to achalasia and diffuse esophageal spasm is determined equally by solids and liquids even from the beginning.[2]

Dysphagia both liquids and solids particularly if there is nasal reflux implies a neurological problem with in coordination of palate. Drooling, difficulty in initiating swallow, nasal regurgitation, difficulty managing secretions, choking, cough episodes, food sticking in the throat also suggests a neurological disorder.

Difficulty in transferring a bolus from mouth to esophagus is usually caused by local disorders of pharynx or larynx. Sensation of food sticking retrosternally in the throat or at the xiphisternum shortly after swallowing is usually caused by esophageal abnormalities.[5]

The duration, as well as the evolution of dysphagia are useful in order to determine the diagnosis. Short term transient dysphagia can be the cause of an inflammatory process, when the progressive dysphagia that can last from a few weeks to a few months is an evidence of esophageal carcinoma.

Likewise, the localization of the dysphagia can help in determining the level of the esophageal obstruction.[2]

Thepast history of swallowing corrosives or of instrumentation suggest benign stricture formation, psychoneurotic disorder may suggest globus hystericus and a history of cholecystitis or peptic ulcer may point to reflex cardiospasm.

The related symptoms can also bring important diagnostic clues. Severe pain on attempting to swallow is more frequently seen with inflammatory lesions such as ulcer oreosphagitis [5].

Nasal regurgitation and aspiration in swallowing are distinctive signs of paralysis or a pharyngeal pouch. Aspiration unrelated to swallowing may be secondary to achalasia, Zenker's diverticulum, or gastroesophageal reflux.

Significant weight loss which is disproportionate to the degree of dysphagia is an important suggestion of carcinoma. When dysphonia precedes dysphagia, the primary lesion is usually in the larynx. Association between the laryngeal symptoms and dysphagia occurs as well in various neuromuscular disorders. Hiccups suggest a lesion in the distal portion of the esophagus.[2]

Greater than 75% of people aged 65 and older have varying degrees of cervical spine degenerative changes, including hypertrophic anterior cervical osteophytes. Anterior cervical osteophytes are generally asymptomatic; however they can lead to dysphagia, dysphonia, and dyspnea. Such symptoms are generally correlated with the size of the hypertrophic spurs.[1]

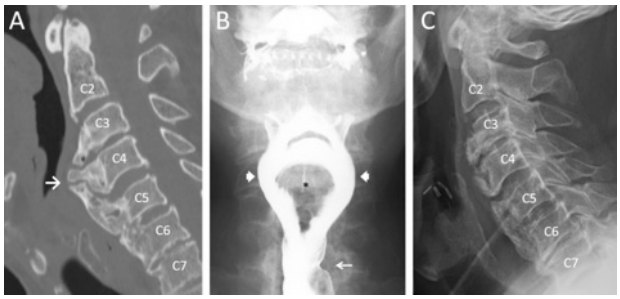

Fig. 3. Anterior cervical osteophyte before and after osteophytectomy [1]

If dysphagia occurs in patients with AIDS or other immunodeficiency diseases, then esophagitis owed to opportunistic infections, such as those with Candida, herpes simplex virus, cytomegalovirus and Kaposi's sarcoma tumors such as lymphomas, should be suspected.[1]

Many medications precipitate dysphagia. These include tetracycline, doxycycline, minocycline, KCl, quinine, aspirin. Here acute development of retrosternal pain is observed usually exacerbated by swallowing and dysphagia (odynophegia). Immunosuppressive drugs used in cancer chemotherapy may precipitate the fungal esophagitis which may present as dysphgia. Drug reactions like Erythema multiforme or Stevens Johnson syndrome can also cause desquamation and ulceration up to the level of esophagus causing the dysphagia.

It is important in motor dysphagia due to skeletal muscle, neurologic and oropharyngeal diseases. Signs of bulbar or psuedobulbar palsy including dysarthrthria, dysphonea, ptosis, tongue atrophy and hyperactive jaw jerk in addition to evidence of generalized neuromuscular disease should be sought.[5]

Examinations of the neck area are necessary in order to detect an enlarged thyroid or vertebral anomalies. Careful inspection of the mouth and throat should highlight lesions that might interfere with the passage of food through the mouth or esophagus due to pain or obstruction. Skin and extremities changes may suggest the diagnosis of scleroderma and other collagen vascular diseases that can affect the esophagus.[2]

All patients with dysphagia must be carefully investigated due to the fact that the course of treatment depends on the main determining cause. If, according to the historical case, there is a suspicion of mechanical dysphagia, the right investigation is barium swallow, endoscopy and esophageal-gastroscopy biopsy. Esophageal-gastroscopy may be necessary in patients with motor dysphagia to exclude an associated structural abnormality.[2]

Endoscopic examination and use of special endoscopes foresophageal biopsy. Video fluoroscopic evaluation is helpful for evaluation of swallowing function and slow motion replay of the complex events during swallowing. Electromyographic studies coupled with blood screens help in neurogenic dysphagia evaluations. MRI-Magnetic resonance imaging is also definitely one of the tests to consider when the cause remains undetected. Esophageal scintigraphy is

useful screening test for esophageal motility disorders. It determines functional obstruction and shows any abnormal transit of the radio-nuclide bolus.[5]

Conclusion

Dysphagia is a frequent complaint to many patients which needs to be well investigated from a multidisciplinary point of view to establish the right and appropriate treatment depending on the causes of dysphagia.

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