

*LITERATURE REVIEW***Dysphagia in Frail Elderly****Rachmat Zulkarnain Goesasi¹, Vina Megitasari¹, Irma Ruslina Defi¹**¹ Department of Physical Medicine and Rehabilitation, Faculty of Medicine Padjadjaran University, Bandung, Indonesia**ABSTRACT**

Effective and safe swallowing is one of the basic needs for human survival. Dysphagia or swallowing disorders often occur in the elderly and increase with age. Patients often do not complain of dysphagia and compensate by modifying the texture of the food. Frailty is associated with an increased prevalence of dysphagia. Difficulty of chewing, formation and positioning bolus are associated with dysphagia. In addition, dysphagia can cause weakness because there is a disturbance due to decrease nutritional status, muscle function, and can cause recurrent aspiration pneumonia. Frailty and dysphagia can be described as a cycle and affect each other. Several interventions were carried out to overcome dysphagia, either compensatory, rehabilitative, or a combination of both.

Keyword: dysphagia, elderly, frailty

ABSTRAK

Proses menelan yang efektif dan aman merupakan salah satu kebutuhan dasar untuk keberlangsungan hidup manusia. Disfagia atau gangguan menelan sering terjadi pada lansia dan meningkat seiring dengan pertambahan usia. Pasien seringkali tidak mengeluhkan adanya disfagia dan melakukan kompensasi dengan memodifikasi tekstur makanan. Rapuh berkaitan dengan peningkatan prevalensi disfagia. Kesulitan mengunyah, pembentukan dan memposisikan bolus berkaitan dengan kejadian disfagia. Selain itu, disfagia dapat menyebabkan kelemahan karena terdapat gangguan akibat dipengaruhi oleh status nutrisi, fungsi otot, dan dapat menyebabkan pneumonia aspirasi yang berulang. Sehingga rapuh dan disfagia dapat digambarkan seperti sebuah siklus dan saling mempengaruhi satu sama lain. Beberapa intervensi dilakukan untuk mengatasi disfagia, baik secara kompensatif, rehabilitatif, maupun kombinasi keduanya.

Kata kunci: disfagia, lansia, rapuh.

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INTRODUCTION

Dysphagia is a symptom of difficulty or discomfort during swallowing, that is the movement of a bolus of food from the mouth to the stomach. The prevalence of dysphagia continues to increase with age. The prevalence in the elderly community ranged from 11.4 – 33.7% using a screening questionnaire and 23% using a clinical exploration method (volume viscosity swallowing test), while it was around 50% in the elderly who were hospitalized. Patients often do not complain of dysphagia and compensate by modifying the texture of the food. Dysphagia contributes to poor oral intake, malnutrition, dehydration, and increased risk of aspiration.¹

Frailty is a clinical condition of increased susceptibility and decreased ability to maintain homeostasis associated with aging and characterized by a decrease in the function of various physiological systems.^{1,2} Frailty is associated with increased prevalence of dysphagia. Decreased muscle strength is associated with dysphagia. In addition, dysphagia can cause weakness because there is a disturbance due to being influenced by nutritional status, muscle function, and can

cause recurrent aspiration pneumonia. Thus, frailty and dysphagia can be described as a cycle and can affect each other.^{3,4} This literature review discuss the dysphagia in frail elderly and the treatment that can be given.

The selection of literature was conducted through specific keywords using computer- aided search engine. The literature or data consist of original articles and/or review articles as well as book which were written in English. The publication year of the literature or data should not exceed ten years prior. The keywords used were dysphagia, elderly, frailty, rehabilitation.

DISCUSSION

Frailty is a clinical condition of increased susceptibility and decreased ability to maintain homeostasis associated with aging and characterized by a decrease in the function of various physiological systems.^{1,2} Frailty is thought to result from age-related underlying physiological and/or biological changes and may consist of one or more diseases, or even end-stage outcomes of severe disease.^{5,6}

Age-related changes put the elderly at risk for dysphagia, however the swallowing process in the elderly is not always disturbed. The elderly can be more vulnerable and with additional stressors such as acute illness and certain medications can change from swallowing of healthy elderly (presbyphagia) to dysphagia. Physiological reserve decreases gradually with aging, but in the frail elderly there is a great decline so that changes occur.^{2,7}

Several factors associated with dysphagia and aspiration include delayed oral transit, incomplete oral clearance, changes in voice quality, abnormal swallowing reflexes, and cough abnormalities.^{8,9} Musculoskeletal factors, such as weakness of the muscles of mastication, arthritis of the temporomandibular joint, osteoporosis of the jaw, changes in tongue strength, and coordination of oropharyngeal events, can interfere with effective swallowing. Poor changes in the dental pattern will also affect the process of forming a food bolus.¹⁰ Salivary gland secretions also decrease with age, causing a dry mouth, which can make swallowing difficult.¹¹

The main characteristic of the swallowing process in the elderly is that the process was much slower than the other age population. The transfer of food boluses from the mouth to the esophagus occurs much longer in the elderly aged over 65 years compared to under 45 years, so the bolus can remain near the airway by pooling or pocketing in the pharyngeal recesses.¹²⁻¹⁴ Loss of teeth, poor dental patterns, and decreased tongue muscle strength will affect the chewing process and the formation of a food bolus. Solid boluses that are not chewed properly and especially large boluses are potentially fatal to obstruct the airway. Liquids with low viscosity, such as water or tea, will move faster so that the elderly are at more risk of aspiration.^{15,16}

The normal aging process includes a decrease in muscle mass, fat infiltration into muscle tissue and a decrease in muscle strength. The elderly tries to compensate by changing the texture of the food with something that is easier to chew, stop eating certain foods, resulting in weight loss.

Modification of food texture causes a decrease in the nutritional content needed, so that the elderly were vulnerable to muscle wasting and sarcopenia.^{7,17} Muscle wasting that occurs in the jaw and diaphragm muscles results in a decrease in the swallowing strength and the effectiveness of airway expulsion, such as coughing and sneezing. Thus, elderly was at risk of aspiration pneumonia, and the risk of silent aspiration and pneumonia will exacerbate the sarcopenia.^{7,18}

Dysphagia consequences

The consequences of dysphagia may vary, from social isolation due to the embarrassment of choking or coughing while eating to physical discomfort to potentially life-threatening conditions, such as aspiration. Silent aspiration is a condition in which a bolus of saliva, food, liquid, medication, or any foreign material enters the airway below the vocal folds without triggering obvious symptoms such as coughing or throat clearing. Clear or silent aspiration can progress to pneumonitis, pneumonia, exacerbation of chronic lung disease, or even asphyxia and death.⁷

Evaluation of frailty and dysphagia

Several tools to identify frail elderly have been developed. Fried frailty phenotype and frailty index are the most widely used tools to identify and assess the frail elderly, but it requires a long time and high technique. The FRAIL scale is a fast method and does not require difficult measurements.¹

Dysphagia screening can be carried out using the EAT-10 questionnaire which included all aspects of dysphagia, such as oropharyngeal, esophageal,

liquid, and solid dysphagia. Coughing and choking should be considered as red flags in the elderly, because silent aspiration in this population often occurs with dysphagia. Another sign of dysphagia is weight loss, malnutrition, and changes in diet, such as prolonged meal times and changes in food consistency.³

Dysphagia examination

Non-instrumental examination is a simple examination, which usually includes an examination of the cranial nerves and swallowing experiments using various textures. A practical way to see the presence or absence of dysphagia in a population with a high prevalence is to carry out routine screening, one of which is a water swallow test or a multiconsistency test. One of the challenges faced when screening for dysphagia is the low sensitivity to detect the presence of silent aspiration. Several screening tools have a high sensitivity for detecting aspiration, such as the Gugging Swallowing Screening (GUSS), Toronto Bedside Swallowing Screening Test (TOR-BSST), or the 3 oz water swallow test.³

Instrumental examination is performed if the non-instrumental examination is suspected of dysphagia. Various imaging methods are available to study swallowing, including ultrasound, Magnetic Resonance Imaging (MRI), computed tomography scanning (CT scan) and scintigraphy.¹⁹

Videofluoroscopy Modified Barium Swallowing (VMBS) is the most commonly used instrumental examination to assess the anatomical integrity of the oropharynx, swallow physiology, and bolus flow. Structural abnormalities and

mucosal lesions are identified from the ingested barium and used to describe the soft tissue structures through which it passes. Fiberoptic Endoscopic Evaluation of Swallowing (FEES) It is the second most common instrumental approach used in the elderly. FEES combines the traditional endoscopic examination with the dynamic recording of the swallowing process. FEES can fully evaluate swallowing function, from food entering the mouth to the esophagus, and determine the safest position and best food texture to maximize nutritional status and eliminate the risk of aspiration.¹⁹

Management of Dysphagia in Frail Elderly

Management of dysphagia includes compensatory interventions, rehabilitation, or a combination of both. Compensatory interventions avoid or reduce the effects of the structurally compromised or neuropathological disorders, along with the bolus flow physiology and biomechanics. Dysphagia rehabilitation interventions can be carried out directly by improving anatomical structures such as muscles or neural circuits that can have a direct influence on physiology, biomechanics, and bolus flow.¹⁹

Compensatory interventions are the most frequently performed interventions because they require less effort and can be given to patients who are relatively passive. These interventions consisted of postural adjustment, reduced feeding speed, bolus size restriction, adaptive equipment, environmental adaptation, and dietary modification. Postural adjustments are relatively simple to be taught to the patient, require minimal effort, and can eliminate bolus flow misdirection through biomechanical

adjustments. The general postural rule for safe swallowing is to eat in an upright posture so that the bolus of food can be swallowed under the force of gravity and prevent spillage of food into the airways. In hemiparesis patients, postural adjustments are made by turning the head to the side of hemiparesis.

The recommended dietary modification is to modify the texture such as porridge and thickened liquids to prevent aspiration. The use of teaspoons or spoons and modified eating utensils such as glossectomy feeding spoons is also recommended, so that patients can perform activity daily living (ADL) independently.¹⁹

Rehabilitative interventions are often delayed because they can exacerbate dysphagia symptoms. The recommended rehabilitative exercises are (1) simple isotonic/isometric neck exercises performed over a period of 6 weeks with the patient lying on his back and raising his head (shoulders remain flat) with a number of repetitions; (2) Isometric resistance exercise for 8 weeks on the tongue to improve swallowing safety by reducing airway invasion, increasing tongue pressure, and increasing tongue structure both in volume and size. The resistance exercises can improve the functional reserve and stimulate motor unit recruitment. In addition, there are several swallowing maneuvers to stimulate effective swallowing under voluntary control, such as supraglottic swallow, effortful swallow, and Mendelsohn maneuver, but these maneuvers cannot be performed on patients with cognitive impairment and patients who are easily fatigued.¹⁹

Neuromuscular Electrical Stimulation (NMES) is a new therapeutic method in treating

swallowing disorders. This method is usually used in addition to conventional swallowing therapy, which involves the delivery of an electric current through electrodes placed externally to stimulate the peripheral nerves that innervate the associated muscles. NMES could improve the swallowing function and act as a therapeutic modality for improving masseter thickness and maximal bite force. In patients who use Nasogastric Tube (NGT), there will be a decrease in the number of swallowing processes, so that it will cause atrophy of the muscles that play a role in the swallowing process. The provision of motor electrical stimulation is expected to be effective in protecting these muscles from atrophy.²⁰

CONCLUSIONS

Effective and safe swallowing is one of the basic needs for human survival. Dysphagia or swallowing disorders often occur in the elderly and increase with age. Frailty is one of the components that must be assessed in elderly patients with dysphagia, and vice versa. Management of dysphagia is usually in the form of compensation, rehabilitation, or a combination of both. Rehabilitation interventions can be carried out directly by improving anatomical structures such as muscles or neural circuits that can have a direct influence on physiology, biomechanics, and bolus flow. In addition, there are several swallowing maneuvers to stimulate effective swallowing, but these maneuvers cannot be performed on patients with cognitive impairment and patients who are easily fatigued. Compensatory interventions are

the most frequently performed interventions because they require less effort and can be given to patients who are relatively passive. Compensatory interventions consist of postural adjustments, reduced feeding speed, bolus size restriction, adaptive equipment, environmental adaptation, and dietary modification. Neuromuscular Electrical Stimulation can also be given to improve muscle contraction and prevent atrophy.

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