An Overview of the Management and Rehabilitation of Dysphagia

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Abstract

Dysphagia is a medical condition that makes it difficult for a person to eat or swallow. It is estimated that 590 million people worldwide have dysphagia. The causes are varied and include neurological disorders like stroke and motor neuron disease, head and neck cancer, neuromuscular diseases, inflammatory diseases such as dermatomyositis, dementia, cervical spinal cord injury, and anterior vertebral ossification. The assessment and screening of dysphagia consists of a questionnaire-based interview, mealtime observation, and, if deemed necessary by a screening test or instrumental examination by specialists. Treatment is based on the diagnosis, patients' cognition and information gathered by screening and clinical evaluation. Patient's function can be improved only when treatment is comprehensive and includes compensatory feeding using an adjusted swallowing diet, compensatory posture adjustment, and nutritional improvement. We present a brief overview of the assessment and management strategies for dysphagia.

Keywords: deglutition disorder, dysphagia, rehabilitation, disease management.

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Introduction

Dysphagia is a medical condition that makes it difficult for a person to eat or swallow.[1] It is estimated that around 590 million people worldwide have dysphagia.[2] The causes are varied and include neurological disorders like stroke and motor neuron disease, head and neck cancer, neuromuscular diseases, inflammatory diseases such as dermatomyositis, dementia, cervical spinal cord injury, and anterior vertebral ossification (Forestier's disease).[1] The negative consequences of dysphagia may include aspiration pneumonia, choking, dehydration, and malnutrition.[1] Dysphagia in the long term can also lead to isolation due to deprivation of the opportunity to share food with others, loss of social skills, depression, and heavy caregiving and financial burdens for the family members.[3]

1. Dysphagia Management Flow

Optimal treatment and management of feeding and swallowing disorders involves collaboration among multiple professions and a systematic approach towards evaluation.

We propose a "dysphagia management flow" (Figure). The "flow" starts from the complaint of the patient when she/he presents to the primary physician or rehabilitation medicine doctor for the consultation. The primary physician gathers detailed information about the dysphagia and its impact on the patient by a structured questionnaire, mealtime observation, and bedside screening (detailed information on these assessments which are presented later on).

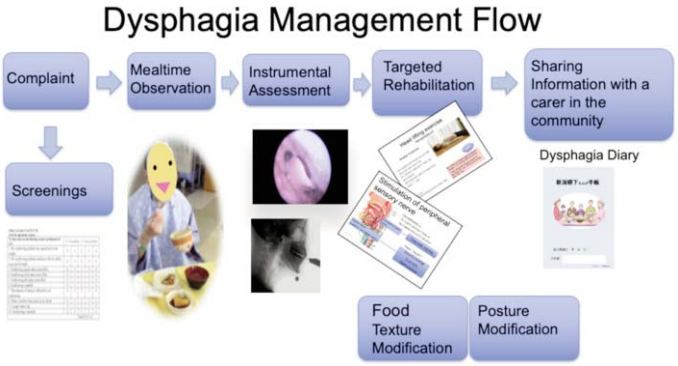

Figure: Dysphagia Management Fl.

Once diagnosis of dysphagia is confirmed, patient should be referred to a rehabilitation or dysphagia specialist for detailed instrumental assessments and evaluation. After evaluation, the rehabilitation medicine doctor devises a treatment strategy. The strategy usually consists of rehabilitation training, compensatory measures with food texture modification and / or posture modification, and nutritional improvement. Successful in hospital treatment is not the end of the process. Patients can remain stable and dysphagia free in the community only after their eating patterns, eating styles, posture, and oral care methods are shared with their caregivers.

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2. Assessment and screening for Dysphagia

The assessment of dysphagia consists of a questionnaire-based interview, mealtime observation and, if deemed necessary by a screening test, instrumental assessment by specialists.

2.1. Screening

2.1.1. Screening Questionnaires

The Eating Assessment Tool-10 (EAT-10)[4] and the Seirei-Shiki Questionnaire[5] are two questionnaires which ask patients complaints related to swallowing. The EAT-10 is a screening tool for dysphagia, with a score of 3 or higher indicating suspicion of dysphagia and a recommendation for referral to a specialist. The Seirei-Shiki Questionnaire, which was developed in Japan is also a useful questionnaire for documenting problems in patients with possible dysphagia.[5]

2.1.2. Bedside Assessment Tools

Bedside physical assessments are another way to detect dysphagia. Two bedside screening tools are frequently used in clinics in Japan. First is the repetitive saliva swallow test (RSST)[6] and second is the 3-ml revised water swallow test (MWST).[7] In RSST the number of dry swallows in 30 seconds are evaluated, and dysphagia is suspected when the patient swallows less than three times.[6]

In the MWST test, the examiner places 3ml of water in the patient's mouth with a syringe and instructs the patient to swallow. The physician observes for the presence or absence of swallowing, wet hoarseness, and respiratory changes. The results of these observation are used to score the patient from 1 to 5. If the patient coughs and / or shows distressed breathing, the score is one. If the subject shows distress and is suspected to aspirate without cough, the score is two. If the subject does not show any problem on breathing besides cough and / or wet voice, the score is three. For score four, the subject swallows without breathing distress or cough. For score five, after evaluation of the first swallow, the subject can do two more dry swallows in 30 seconds on the instructions of the evaluator.

2.2. Mealtime Observation

Observation of the eating situation can also provide important information suggestive of dysphagia. The mealtime observations includes, whether the patient is awake during eating and swallowing, how he or she eats (gulping or not), whether certain foods are left out (because it is beyond patient's ability to process or swallow) , whether the bite size is appropriate, whether the spoon or utensil is too large, whether too much food is left in the mouth after swallowing, whether the patient is blowing his/her nose after swallowing, whether food residue is seen in nasal discharge, whether the patient's posture slumps inappropriately during the latter half of the meal. If dysphagia is suspected after screening and on mealtime observation, referral to a specialist in dysphagia should be made.[8]

2.3. Instrumental Assessment

Instrumental evaluation is done in specialized clinics by experts in dysphagia management. Fibreoptic Endoscopic Evaluation of Swallowing (FEES) and modified barium swallowing examination (Video fluoroscopy: VF) are two gold standard instrumental examinations.

3. Treatment and Rehabilitation Strategy

3.1. Treatment Strategy: an overview

Treatment is based on the diagnosis, condition of the patients, cognition and information gathered by screening and clinical evaluation. Patient function can improve only when treatment is comprehensive and includes compensatory feeding using an adjusted swallowing diet, compensatory posture adjustment, and nutritional improvement. Some principles to plan the targeted rehabilitation and integrate compensatory feeding and nutrition therapy are as follows.

3.2. Targeted Rehabilitation

The rehabilitation strategies should be based on the findings of endoscopic swallowing and should be tailored to the specific site of the disorder. If a bolus remains in the mouth, training should focus on improving the coordination of the tongue movement. If the bolus remains in the tongue base or the vallecula, training of the tongue muscles or suprahyoid muscles for laryngeal elevation may be effective. In cases in which the velocity of the bolus is faster than the elevation of the larynx, causing aspiration before swallowing, thermal tactile stimulation (ice massage)[9] or interferential current stimulation[10] to stimulate the peripheral glossopharyngeal nerve, vagus nerve, and epiglottis nerve may shorten the laryngeal vestibule closure reaction time (the time from the bolus reach to pyriform to the elevation of the larynx). There are multiple areas for pharyngeal residues (vallecula and / or pyriform). To ensure velopharyngeal closure, blowing exercise (blowing air with whistle, soft balloon, or pipe) training promotes soft palate elevation. Training to open the PES such as Shaker exercise (head raising), jaw-opening exercise (suprahyoid muscle training), and balloon dilation training is also recommended.[11]

3.3. Compensatory measure: Modification of food texture

In addition to the rehabilitation training described above, "compensatory feeding" is also important.

"Compensation" refers to the use of remaining functions to achieve the goal of "eating" or "nutritional intake" in a manner different from that of a normal person. Food texture is modified to meet the patient's ability to swallow. For example, boiled and chopped vegetables are easier to eat than raw vegetables, and the fibres do not remain in the mouth or pharynx. The Japanese Society of Dysphagia Rehabilitation published the Japanese Dysphagia Diet 2013, which was revised in 2021.[12] In this classification, the texture modified food and drink is divided into five levels from 0j (jelly) 0t (thickened) to 4, with those with lower numbers being easier to swallow and those with higher numbers being more difficult. The standardization of the terminology is also progressing on a global level. The International Dysphagia Diet Standardisation Initiative framework (IDDSI framework)[13] is currently the mainstream in Europe and the United States. This system uses 8 levels of food (Levels 3-7) and beverages (Levels 0-4) from 0 (non-thickened liquids: beverages) to 7 (regular foods: foods), with colours and numbers indicating the level of difficulty in feeding and swallowing.

3.4. Compensatory measure: Postural modification

Postural modification is another form of compensation. The chin down, head rotation, or reclining position, side-lying posture are commonly used postural modifications adopted for dysphagia treatment.[11] The detailed description is beyond the scope of this article and is available elsewhere.[11] .

3.5. Nutritional Therapy

Patients with dysphagia are sometimes already undernourished at the time of consultation. In many cases, even after treatment is initiated, malnutrition progresses. This is because the process of preparing a texture modified foods often involves mixing water with a blender, making a mousse or jelly, during which the nutrients are often diluted.[14] In addition, patients are often offered food that is different from their "regular" diet, and this often leads to problems in clinical practice, such as a lack of motivation to eat and a lack of interest in the food they are consuming. Those treating patients with dysphagia should be aware of this and consider increasing the caloric density of the meals provided, allowing for small, frequent meals, and discontinuing medications that decrease food desire or cause taste disorders. It is also recommended that total energy expenditure be calculated using ideal body weight rather than current body weight when calculating caloric intake.

Conclusion

For dysphagia management, an activation of “dysphagia management flow” is important. The flow starts from patient’s complaint. After appropriate assessment with questionnaire, mealtime observation, bedside screening, and instrumental assessment, it is possible to create a tailored goal for treatment strategy. Comprehensive and integrated approach including targeted rehabilitation, compensatory feeding using a texture modified food, posture modification, and nutritional improvement is the way to make patients reach the goal.

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