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The use of modified foods and fluids in the management of dysphagia

Abstract

Dysphagia is the medical term encompassing a range of difficulties associated with swallowing foods, fluids, and saliva which can lead to malnutrition, dehydration, increased length of hospital stay, aspiration pneumonia, and potentially death. This article will discuss the management of dysphagia through modification of foods and fluids to increase swallow safety, and to optimise nutrition and hydration. Considerations for the provision of alternative routes of nutrition and fluids, as well as end-of-life management for those with dysphagia, will also be discussed.

Keywords: dysphagia, nutrition, fluid, thickeners, oral nutritional supplements

Introduction

Swallowing involves voluntary and reflexive neuromuscular pathways arising from a number of levels within the central nervous system from the cerebral cortex to the medulla oblongata. Sensory and motor actions are tightly coordinated to ensure the safe passage of a bolus from the mouth to the stomach. Dysphagia is termed as a difficulty in transferring a bolus from the mouth to the stomach and can also include behavioural, sensory, and preliminary acts which occur in preparation for the swallow such as visual recognition of food and fluids, and the physiological response to the presence of food. Dysphagia can be a symptom (World Health Organisation, 1992) or a condition in its own right and can occur in a range of conditions such as in stroke, cranial nerve lesions (e.g. Bell's palsy), and neurological conditions (e.g. myasthenia gravis, Parkinson's disease, multiple sclerosis, and Guillain-Barré syndrome).

The consequences of dysphagia can include pneumonia, malnutrition, and dehydration (Langmore et al, 1998), which can lead to longer hospital stay, disability, and even death (Martino et al, 2005). Aspiration refers to food, fluid, or secretions entering the airway which can then progress into the lungs and cause aspiration pneumonia.

It is important to remember that some individuals who aspirate will not develop aspiration pneumonia and factors such as mobility, medical status, ability to adhere to recommendations, oral hygiene, number of medications taken, and dependence for feeding are stronger risk factors that can impact on whether an infection will occur (Langmore et al, 1998; Hibberd et al, 2013). This is supported by studies on patients who are nil-by-mouth and fed entirely by tube which have demonstrated that tube feeding is associated with a higher rate of aspiration pneumonia than in patients those who eat and drink (Langmore et al, 1998).

Swallowing Assessment

In the United Kingdom and Ireland, swallowing is assessed by Speech and Language Therapists (SLTs). The Royal College of Speech and Language Therapists (2005) highlights that this assessment should encompass:-

- Information gathering, including:
 - Biographical and medical history
 - History of dysphagia
 - Patient and caregiver opinions
 - Current medical status including considerations of posture, respiratory status, and alertness
- Oromotor Examination – strength, speed, and accuracy of movement in oral and pharyngeal structures relating to cranial nerves: Trigeminal (V), Facial (VII), Glossopharyngeal (IX), Vagus (X) and Hypoglossal (XII)
- Oral hygiene
- Oral trials of different fluid consistencies and food textures if deemed appropriate

However, many hospital departments and NHS Trusts will have a locally agreed and devised nursing swallow screen which allows nurses to assess whether or not a referral to SLT is required. For acute stroke patients in particular, this swallow screen should be completed within 4 hours of admission using a validated screening tool by a trained healthcare professional (Royal College of Physicians, 2016). Please speak with your Speech and Language Therapy Team and they will be able to alert you to a local swallow screen and provide training if required.

Nutritional Assessment

Nutritional screening is the initial step in identifying those patients who may be at risk of malnutrition (Kondrup et al, 2003) and should be completed on admission and repeated weekly (National Institute for Health and Clinical Excellence, 2006). There are a range of tools that enable nurses, healthcare assistants, nutrition ward assistants, and other ward-based staff to screen a patient's nutritional status, which include the Malnutrition Universal Screening Tool (MUST), Subjective Global Assessment (SGA), Mini Nutritional Assessment (MNA), Nutritional Risk Screening 2002 (NRS 2002), and those locally developed in NHS Trusts. These tools can take into account weight, weight history, changes in appetite and dietary intake, co-morbidities and disease status, but their use and success is dependent on correct completion and the availability of necessary equipment, such as properly calibrated weighing chairs and hoists (National Patient Safety Agency, 2009; Van Bokhorst-de van der Schueren et al, 2014).

Depending on locally agreed policy, strategies may be in place for the management at ward level for reduced appetite and poor dietary intake. These can include a coloured tray system to identify those who require assistance with meals, accurate completion of food and fluid charts, provision of additional snacks, and use of oral nutritional supplements (ONS) which are products used to enhance a patient's nutritional intake. If a patient scores sufficiently on the nutritional screening tool, there should be a referral made to a dietitian for a complete nutritional assessment. The dietitian should also be informed if the patient requires a texture modified diet (TMD) or modified fluids, and importantly if the patient has been made nil-by-mouth as they may require supplemental or total tube feeding.

National Food and Fluid Descriptors

The use of TMDs and fluid thickeners is aimed at preventing or reducing the risk of aspiration and choking for people who have an impaired swallow. The commonly used food and fluid descriptors are the Dysphagia

Diet Food Texture Descriptors (National Patient Safety Agency Dysphagia Expert Reference Group, 2011), or the newer International Dysphagia Diet Standardisation Initiative (IDDSI) Framework (2016). The IDDSI describes food and fluids across seven different textures, with some crossover between food and fluids (see figure 1) in an effort to help standardise the description of these modified textures and thickened fluids for people with dysphagia worldwide.

Managing nutrition in dysphagia

In the UK, texture modifications are currently defined in the Dysphagia Diet Food Texture Descriptors (National Patient Safety Agency Dysphagia Expert Reference Group, 2011) and can be seen in table 1. These modifications can help maximise the nutritional intake of patients with dysphagia. However, in Wright et al (2005), inpatient dysphagic patients on TMDs consumed less energy and protein (specifically those on textures B and D) than those who were not dysphagic potentially due to a range of factors including poor presentation of TMDs, lack of support and assistance to feed, lack of meal choice, and poor palatability of TMDs. Further to this, Wright et al (2008) demonstrated that targeted support strategies for dysphagic patients on TMDs were beneficial in improving their nutritional intake which included helping patients to feed, and providing ONS. An additional strategy may be to introduce, or provide further support to, a programme of dedicated ward staff (e.g. nurses or ward assistants) acting as dysphagia/nutrition links, to give substantial patient benefits in providing focused and supportive care ensuring nutrition and hydration needs are met (Rosenvinge and Starke, 2005).

Management of nutrition for patients with dysphagia requires balancing the goals of intervention: optimising swallow safety, ensuring patient satisfaction, maximising independence with feeding and maintaining stable nutrition on the least restrictive diet. The decision to recommend a TMD, particularly puree, must take into account patient preference, expected compliance, and possible need for greater oral and tactile sensory feedback for patients with cognitive impairments such as in the use of finger foods for dementia patients.

Managing fluids in dysphagia

It is well documented that thin (normal) fluids (see table 2) are most likely to be aspirated (Kuhlemeier, Palmer, and Rosenberg, 2001). Treatments for this are limited (Robbins et al, 2008) but could include compensatory strategies such as postural changes or controlling the rate of the bolus. Historically, the most common management option has been the prescription of thickened fluids (Garcia et al, 2005) which are more cohesive and travel more slowly thus allowing greater control than thin fluids (Cichero and Murdoch, 2006).

The main concern associated with the prescription of modified fluids is patient dissatisfaction. When thickener is added to a liquid its flavour can be suppressed (Matta et al, 2006) and the viscosity and texture can change. Poor palatability of the thickened fluids and the inability of thickened fluids to quench thirst (Cichero, 2013) can result in non-compliance with recommendations, reduced fluid intake (Finestone et al, 2001; Whelan 2001; Leibovitz et al, 2007), an increased risk of dehydration (Crary et al, 2016) and associated urinary tract infection and other health concerns due to refusal to drink. Macqueen et al (2003) found that up to 75% of patients did not like using thickener and some patients may give up certain drinks rather than having them in their thickened form. In Vivanti et al (2009), all 25 dysphagic patients did not achieve their fluid requirements orally, and total water intake was mainly derived from food consumed with only those receiving supportive enteral or parenteral feeding met their minimum fluid requirements.

To enable fluids to be thickened, a variety of starch and gum based thickener products are available (see table 3). Older starch based thickeners may have a more 'grainy' texture compared to newer gum-based thickeners which may be more 'slick' and these starch based thickeners are associated with greater patient satisfaction (Matta et al, 2006). Further complications associated with thickening fluids are compounded by a lack of knowledge and skills in the preparation of thickened fluids which can contribute to dehydration in the dysphagic patient.

It has been demonstrated that there is equal bioavailability of water from both thin and thickened liquids (Cichero, 2013), therefore thickened fluids themselves are not the cause of dehydration. Patients dependent on nursing staff, family members or carers, to ensure availability of appropriate consistency fluids are likely to be more at risk of dehydration due to poor education and inability to thicken fluids to the correct consistency (King and Ligman, 2011), and it is recognised that this is, to some extent, an art. The same liquid at different temperatures may require slightly varying amounts of thicker to achieve the same consistency. Therefore, when prescribing thickened fluids, SLTs must ensure adequate training has been delivered to the patient, if appropriate, and to ward staff, family members, and carers. For physically dependent or cognitively impaired patients, consideration of carer support on discharge home is essential to ensure the adequate provision of appropriately thickened drinks.

Acute or chronic dehydration has consequences for medical stability and patient wellness which may contraindicate the use of thickener. Furthermore, for patients with pharyngeal weakness rather than a mistimed or late swallow trigger thicker substances may result in increased pharyngeal residues which pose an aspiration risk post-swallow (Steele et al, 2015). Instrumental assessment through videofluoroscopy or endoscopy is often indicated prior to commencing a patient on modified fluids and access to this, particularly for community therapists, can be difficult.

As well as fluids themselves, food contributes approximately 20% of daily fluid intake (Grandjean and Campbell, 2004) with snacks between meals providing additional fluids as well as optimising nutritional intake, such as thick soup, pureed fruit, yoghurts, custard, and milk-based puddings (Vivanti et al, 2009). Dysphagic patients should have their oral intake carefully monitored and documented on food and fluid charts which will enable the dietitian to assess the adequacy of the dietary intake with the aim of avoiding unnecessary tube feeding. Pre-thickened ONS (see table 4) can be prescribed to provide a source of nutrition and fluids (Whelan, 2001; Wright et al, 2005) as well as other nutritional products (see table 5) which may be used as per SLT recommendations.

Other management options

When considering feeding management options for patients with dysphagia both their needs and expectations, and those of their family and carers should be carefully considered by the multidisciplinary team. The options for management should be the most appropriate for that patient and consideration should be given to a range of strategies that include TMDs and thickened fluids, tube feeding, risk-acknowledged feeding, and comfort feeding (Foley et al, 2008; Jones, 2010; Royal College of Physicians 2010; Miles et al, 2016).

For some dysphagic patients, tube feeding may be an option (Dennis et al, 2006) either as a short term measure by nasogastric tube or as a longer term route by gastrostomy or jejunostomy tube. The decision to implement tube feeding should take into account the patient's wishes, health status, cognition, functionality and prognosis as this form of feeding will not be appropriate for everyone especially if end-of-life **or palliative** management is being considered.

For palliative patients and those approaching end-of-life, quality of life and comfort considerations may outweigh potential aspiration risks. If a patient decides they do not want to have thickened liquids or a TMD, and it is deemed they have capacity to make that **informed** decision or if the multi-disciplinary team decide that the risks outweigh the benefits the patient may continue to eat and drink with acknowledged and accepted risk of aspiration. This may also be the case for patients who are not appropriate for, or who have declined, non-oral feeding via gastrostomy tube. **Furthermore, for those dysphagic patients who are deemed appropriate for risk-acknowledged or comfort feeding, a care plan should be formulated so that these patients can have a suitable nutrition plan whilst limiting the unnecessary endurance of nil-by-mouth status due to clinical indecision around the provision of nutrition. This care plan could be a locally agreed risk-feeding protocol, an example of which is the *Feeding via the Oral Route With Acknowledged Risk of Deterioration* (FORWARD) project discussed further in Sommerville et al (2016). If such a patient is to be discharged, a suitable nutrition care plan should also be formulated for discharge into the community**

(Nagaratnam and Mcquillan, 2014). Risk-acknowledged feeding is likely to result in an increased need for support and education for staff and carers who may feel uncomfortable helping the patient to risk-feed which should include a discussion and an awareness of logistics, quality of life, and respecting the patient's wishes (Miles et al, 2016).

Conclusion

This article has highlighted the risks of malnutrition and dehydration in patients with dysphagia and how healthcare professionals can support patients to ensure adequate oral intake and reduce the incidence of aspiration. It is hoped that through this article healthcare professionals working with patients with dysphagia can feel more confident in recognising those patients who may be at risk of malnutrition and in knowing what dysphagic products are available to them to help meet the nutritional and hydrational needs of their patients. The most appropriate route for nutrition and hydration should be made based on the individual needs of the patient which should include consideration of risk-feeding as well as modified textures and tube feeding. Early involvement of the multidisciplinary team as well as the patient and their family is essential in ensuring the patient's voice is heard and the best outcome for the patient is sought.

Key points to enhance nursing practice for those patients with dysphagia

- Carry out nutritional and swallow screening as per local policy
- Refer identified dysphagic patients to SLT and dietetics for assessment
- Assist those with dysphagia to eat and drink safely to help with the enjoyment of food as per SLT recommendations, and document oral and fluid intake accurately
- Ensure the correct ONSs are given to patients as per dietitian's recommendations to aid compliance (see tables 3-5 for a selection of available products)
- Ask your SLT and/or dietitian for any required training for ward staff
- Consider establishing and supporting a dedicated programme using a nominated member of staff to be a dysphagia/nutrition link e.g. nurse or ward assistant

