Risk of Excessive Sodium Intake in the Use of a Thickener for Dysphagia

Tatiana Magalhães de Almeida, Michele F. Canfild Germini, Cristiane Kovacs, Ana Margaret N.G.F. Soares, Daniel Magnoni, Amanda G.M.R. Sousa

Instituto Dante Pazzanese de Cardiologia, São Paulo, SP - Brazil

Oropharyngeal dysphagia is a deglutition disorder resulting from neurological and/or structural impairment that may result in in decreased social interaction, loss of pleasure in food consumption, malnutrition, dehydration, infectious pulmonary processes and other high morbidity processes. Patients with heart disease from various causes present a risk of developing oropharyngeal dysphagia.

Heart patients are susceptible to neurological disorders such as stroke and transient ischemic attack that may be present with dysphagia. Other possible risk factors for oropharyngeal dysphagia in people with heart disease are: prolonged tracheal intubation, dependence on mechanical ventilation, presence of a tracheostomy tube, manipulation or compression of cranial nerve pairs involved in swallowing and use of drugs that increase dysphagia, in addition to the physiological changes common in elderly patients, especially those with comorbidities, that may interfere in the different phases of deglutition and contribute to the emergence of dysphagic symptoms[1,2].

The speech therapist is the most qualified professional to assess and rehabilitate patients with dysphagia. Once dysphagia is diagnosed, a therapeutic program must be designed to regain efficient swallowing without the risk of pulmonary, nutritional and psychological complications.

Promoting safe swallowing for individuals with dysphagia is a challenge that can be facilitated using therapeutic resources such as diet adaptation, with changes in consistency, volume, temperature and flavor. These strategies used by speech therapists are part of swallowing rehabilitation because they interfere with sensorimotor oral performance and oropharyngeal transit, minimizing the risk of *laryngotracheal* aspiration[3].

A change in the consistency of food is an important tool in the treatment of dysphagia, and foods should be modified according to the degree of dysphagia, the patient's nutritional condition, food intake acceptance and patient morbidity.

Keywords

Deglution Disorders / complications; Eating; Sodium, Dietary; Thickeners.

Mailing Address:Tatiana Magalhães de Almeida •
Instituto Dante Pazzanese/Setor de fonoaudiologia: Avenida Dr. Dante Pazzanese, 500 Vila Mariana Postal Code 04012909 São Paulo-SP.
E-mail: tatianamagalhaesalmeida@yahoo.com.br, tatiana.almeida@dantepazzanese.org.br
Manuscript received February 25, 2013; revised manuscript April 03, 2013; accepted April 03, 2013.

DOI: 10.5935/abc.20130137

Food thickener is used for liquid thickening, a common practice in speech therapy, since liquid swallowing requires greater control than swallowing of foods with a thicker consistency. The chance of premature spillage of food is one of the biggest risks of penetration and/or *larygotracheal* aspiration[4].

According to the standardization of the National Dysphagia Diet (NDD)[5], liquids may be thickened into three consistencies: nectar, honey and pudding, which are prescribed by the speech therapist according to the degree of the patient's dysphagia. The viscosity of thickened liquids is measured in centipoises (cP) and is categorized according to the NDD as: thin liquid 1-50 cP, nectar 51-350 cP, honey 351-1750 cP and higher, and pudding 1750 cP.

The amount of thickener indicated for each consistency will depend on the makeup of the different brands available on the market.

Nutrition (dietary) and medical teams are responsible for the patient's diet in order to maintain or restore the patient's nutritional status. The heart patient often requires sodium restriction, which must be achieved with a maximum amount of 5 g of sodium chloride per day, which is the value of the entire daily intake. The different restriction levels are guided by the patient's individual pathology and the clinical path of each patient. Sodium restriction may be mild, moderate or severe; in the case of moderate restriction, intake should be 2g of salt per day and in the case of severe restriction the patient should eat no added salt, only the salt that is intrinsic in their food[6,7].

Thus, it is necessary in daily interaction with patients to pay attention to the nutritional information of the adapted diet, especially in regards to thickened liquids and the heart patient. This quality standardization is achieved by the presence of mineral sodium in the composition of the thickeners.

The amount of sodium present in the thickeners is not uniform or standardized, varying according to brands available on the market (Table 1).

The total daily intake of sodium in the thickened liquid will depend on the consistency indicated by the speech therapist, the volume of liquid prescribed by the medical team and the brand of the thickener used. Table 1 shows samples of different brands of thickener and the amount of sodium in the three consistencies: nectar, honey and pudding, for a daily intake of 1500 ml of liquids.

Despite the amount of daily sodium intake in the supply of the thickened liquid at the different consistencies, this amount is not high. However, according to the samples in Table 2, this amount could compromise the total sodium intake in moderate or severely restricted diets. Thus, this value must always be considered in the overall diet, taking

into account the minimum restriction of 5g sodium chloride; that is, 2,000 mg sodium/day[6].

It is important that the speech therapist, in partnership with medical staff and dietary staff, carefully evaluate the patients who are prescribed thickened liquids, considering that the value of sodium added by the use of thickener in the general diet is liable to impact negatively on the patient's clinical condition.

In cases with significant restrictions of sodium intake, the intake related to the thickener can be a significant impact factor. It is essential that the team involved considers this aspect towards better therapeutic management of the case.

An opportunity to discontinue the thickener should be evaluated, and the role of the speech therapist is to identify if the patient is able to discontinue use of the thickener, if he will be using it for a long time or even continuously, and to inform the medical staff who will check into the impact in terms of sodium in each case, correlating it with the time of use.

Another aspect that should be decided as a team is the possibility of using natural thickeners, such as the use of fruit that provides a thicker consistency in the preparation of juices and vitamins; in addition, it is also possible for the nutrition team to adapt a diet that avoids foods rich in sodium, as well as a reduction in the amount of salt used in the preparation of food, thus reducing the value of the added sodium.

Some thickeners show an absence of sodium on their labels and the team may opt for these brands. However, there are many controversies regarding the quality of these thickeners, since sodium participates actively in the process of thickening.

The amount of sodium added to the thickener should not be a factor considered separately, but should be considered in the total sodium intake throughout the day. The team needs to observe the patient using thickener closely and be aware of the need to analyze each case separately, taking into account aspects such as basic disease and clinical condition.

The optimal treatment for the patient with dysphagia does not aim at guaranteeing the safe intake of food, but also an optimal nutritional and water intake, in addition to consequent improvement of the clinical condition of the patient. For this to occur, it is necessary to have the cooperation of the entire team, aimed at quality care.

Table 1 - Sodium amount in commercialized thickeners

Thickeners	Sodium per serving
Brand 1	8mg in 4.5g
Brand 2	13mg in 1,2g
Brand 3	2,4mg in 5.0g
Brand 4	0mg in 6.0g
Brand 5	0mg in 3.0g
Brand 6	4.6 mg in 3 g
Brand 7	0mg in 5g

Brands - 1: Thick & Easy; 2: Resource Thicken Up Clear; 3: Biosen; 4: Sust'up; 5: MaxiSperse; 6: Nutilis; 7: Nutriclin.

Author contributions

Conception and design of the research: Almeida TM, Germini MFC; Acquisition of data: Kovacs C, Soares AMNGF; Analysis and interpretation of the dataand Writing of the manuscript: Almeida TM; Critical revision of the manuscript for intellectual content: Magnoni D; Institutional support: Sousa AGMR.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Sources of Funding

There were no external funding sources for this study.

Study Association

This study is not associated with any post-graduation program.

Table 2 – Daily sodium amount (mg) in thickener in three consistencies: nectar, honey and pudding: (1500 ml of liquid)

Consistencies	Sodium amount (brand 1)	Sodium amount (brand 2)	Sodium amount (brand 3)
Nectar	195 mg	137 mg	120 mg
Honey	390 mg	171 mg	180 mg
Pudding	585 mg	220 mg	240 mg

Brands: 1: Thicken Up Clear/Nestle; 2: Nutilis/Support; 3: Thick & Easy/Fresenius.

References

1. Barker J, Martino R, Reichardt B, Hickey EJ,Ralph-Edwards A. Incidence and impact of dysphagia in patients receiving prolonged endotracheal intubation after cardiac surgery. Can J Surg.2009;52(2):119-24.
2. Skoretz SA, Rebeyka DM. Dysphagia following cardiovascular surgery: a clinical overview.Can J CardiovascNurs.2009;19(2):10-6.
3. Ding R, Logemann JA, Larson CR, Rademaker AW. The effects of taste and consistency on swallow physiology in younger and older healthy individuals: a surface electromyographic study. J Speech Lang Hear Res.2003;46(4):977-89.
4. Ozaki K, Kagaya H, Yokoyama M, Saitoh E, Okada S, González-Fernández M, et al. The risk of penetration or aspiration during videofluoroscopic examination of swallowing varies depending on food types. Tohoku J Exp Med.2010;220(1):41-6.
5. The National Dysphagia Diet (NDD). Standardization for optimal care, United States of America: American Dietetic Association; 2002.
6. Bocchi EA, Marcondes-Braga FG, Ayub-Ferreira SM,Rohde LE, Oliveira WA, Almeida DR, et al; Sociedade Brasileira de Cardiologia. III Diretrizbrasileira de insuficiência cardíaca crônica. ArqBrasCardiol.2009;93(1 supl.1):1-71.
7. Gravina CF, Rosa RF, Franken RA, Freitas EV, Liberman A, et al;Sociedade Brasileira de Cardiologia. II Diretrizes brasileiras em cardiogeriatria. ArqBrasCardiol.2010;95(3 supl.2):1-112.