

---

## Dysphagia in Patients with Parkinson's Disease

Mila Bunijevac<sup>1\*</sup> & Siniša Maksimović<sup>2</sup>

<sup>1</sup>*JZU Hospital, Sv Vračevi, Srpske vojske 53 Bijeljina, Republic of Srpska, Bosnia and Herzegovina*

<sup>2</sup>*Faculty of Medicine, Banja Luka, Republika Srpska, Bosnia and Herzegovina*

**\*Correspondence to:** Dr. Mila Bunijevac, JZU Hospital, Sv Vračevi, Srpske vojske 53 Bijeljina, Republic of Srpska, Bosnia and Herzegovina.

### Copyright

© 2019 Dr. Mila Bunijevac, *et al.* This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received: 25 November 2019

Published: 20 December 2019

**Keywords:** *Ingestion; Dysphagia; Parkinson's Disease; Treatment*

### Ingestion (deglutatio)

Swallowing is the process of passing solid food or fluid through the oral cavity, pharynx and esophagus to the stomach.

The ingestion process consists of three phases: the oral, pharyngeal (oropharyngeal) and esopharyngeal phases. The oral phase is the willing phase and it represents the transfer of the bolus from the oral cavity to the oropharynx. The pharyngeal and esopharyngeal phases are reflexes. By pharyngeal phase, the bolus is transmitted from the oropharynx to the upper esophagus, and the esophageal food travels through the esophagus to the stomach [1].

The bolus should undergo an inverted “L” pathway and should not enter the nasopharyngeal proctor or airway along this path. The larynx plays an important role in this process, whose anatomical structure prevents food aspiration during the ingestion process [2].

### Dysphagia

The movement of food and water from the mouth to the stomach is called dysphagia [3]. The term “dysphagia” is of Greek origin and is derived from the word “dys” meaning “difficulty” or “disorder” and “phagio” meaning “to eat” [4].

Swallowing disorders can be a symptom of a disease and can be a consequence of a disease. Anatomically speaking, swallowing disorders can be oropharyngeal and esophageal, and structural and functional based on pathophysiological deviation [5].

Many health problems can affect the ingestion process, such as neurological diseases, head and neck cancers, but also metabolic diseases.

The main causes of diffusion are neurological disorders (stroke, dementia, Parkinson's disease, Huntington's disease, Myasthenia gravis, cerebral palsy and traumatic brain damage) and account for 70-80% of all dysphagia [6,7].

## **Parkinson's Disease**

Parkinson's disease is a neurodegenerative disease characterized by tremor, bradykinesia, numbness and loss of reflexes, but also secondary symptoms of dysarthria and dysphagia.

It occurs more often in men than in women, and generally occurs at about 60 years of age. The most common factors that lead to Parkinson's disease are the genetics and environment in which the person lives, that is, exposure to toxic substances (smoking, alcohol consumption, malnutrition, herbicides, pesticides).

Dysphagic difficulties are present in 82% of patients with Parkinson's disease, and may occur at each stage of the disease so that some symptoms may be one of the early signs of the disease, but may also occur in later stages of the disease.

Dysphagic difficulties in patients with Parkinson's disease are most commonly associated with the pharyngeal phase [8,9], which is associated with the slowness of the muscles that are engaged at this stage [3]. The process of chewing and swallowing food is slower, that is, it retains food longer in the mouth. The patient makes a great effort to digest food [10]. Problems also occur when swallowing tablets [11], and coughing and water. Abnormalities in the form of beard rigidity and difficulty in holding the head and neck during meals are observed in patients with severe disease. This kind of problem leads to reduced nutrient intake leading to weight loss, as well as a number of physical and social difficulties.

## **Diagnostics**

The diagnosis of dysphagia is multidisciplinary. It is conducted by a team of experts, neurologists, radiologists, speech therapists and nurses. Some studies indicate that 31 to 100% of individuals have a problem with food or water ingestion [12] and others that this percentage is much lower [13]. This difference may be the result of different definitions of swallowing disorders, different manifestations of symptoms [14] as well as ways of testing people with Parkinson's disease [8].

Diagnostics involves the clinical examination of neurologists and speech therapists by screening.

The instrument and tests used must be:

- acceptable to the patient - understandable,

- easy to use,
- to give consistent results if used by different examiners,
- be acceptable in terms of resource use - time and equipment,
- Make the patient aware of his or her health status [15].

There are numerous tests to assess swallowing disorders, based on which the speech therapist can determine whether the patient is normal ingestion or if there are certain difficulties during swallowing.

Screen tests are easier to use and we distinguish the following:

- Water ingestion test,
- Operational definitions of the six clinical predictors of risk of aspiration [5,16].
- GUSS - ingestion screening test,
- EAT - 10 (*Eating Assessment Tool*) - a screening test to assess ingestion,
- SSA (*Standardized Swallowing Assessment*) - standardized swallowing assessment in neurological patients.
- MSA (*Modified Swallowing Assessment*),
- FOIS (*Functional oral intake scale*),
- DOSS (*Dysphagia outcome and severity scale*),
- DSS (*Dysphagia severity score*).

In some situations, in addition to screening tests, instrumental assessment of ingestion should be performed. The most commonly used methods are videofluoroscopic swallowing assessment and fiberoptic endoscopic swallowing assessment.

Videofluoroscopy is a radiological method in the diagnosis of ingestion disorders. With this method, the irregularities of the lumen of the pharynx and esophagus can be seen, ie the anatomic structure of the oral cavity, pharynx and esophagus is obtained. The only downside is that the patient is exposed to radiation.

The fiberoptic endoscopic method allows visualization of laryngeal and pharyngeal structures using a transnasally flexible optical endoscope while the patient ingests food and fluid [17]. It is performed by educated clinicians.

## **Treatment of Patients with Dysphagia**

The treatment of patients with dysphagia depends on the cause, symptoms and type of swallowing disorder. Otherwise all procedures can be divided into direct and indirect. Direct procedure involves giving certain instructions to the patient during each sip or ingestion of the food, and indirect procedures refer to exercises that improve the nervous and muscular activity necessary for normal ingestion. The treatment of these patients involves both compensatory and habilitation / rehabilitation techniques. Compensation techniques

are used to allow adequate swallowing and include: neck stretching, retraction of the chin, turning of the head and lying on the side [18]. Attention is also paid to the amount and structure of food during the ingestion process [19]. Habilitation/rehabilitation techniques are sometimes used as compensatory ones, and they include supraglottic swallowing, supersupraglottic swallowing, Mendelsohn menvar, thermo-tactile stimulation.

The main goal of the treatment is to improve the ability to chew and ingest food and liquids, thereby allowing the necessary nutrients to be introduced into the body, leading primarily to a better general condition of the patient and, consequently, to the quality of his life.

## Conclusion

The high prevalence of dysphagia and the fact that almost any neurodegenerative disease can cause swallowing disorders require and require even greater attention to both theoretical and practical work in its early detection, diagnosis, therapy and rehabilitation.

It is very important to recognize the symptoms of swallowing disorders early in order to be able to adequately intervene, ie to alleviate or prevent major difficulties or problems, but also to improve the quality of life of people with dysphagia.

## Bibliography

1. Fanghänel, J., Pera, F., Anderhuber, F. & Nitsch, R. (2009). *Waldeyerova anatomija čovijeka*. Zagreb: Golden marketing.
2. Baredes, S. & Moiser, K. (2006). *The Biology of Swallowing*, Van De Water, T. R., Staecker, H, Otolaryngology. New York: Thieme Medical Publishers.
3. Ertekin, C. (2010). Neurofiziološkr metode procjene orofaringealne disfagije (neurogena disfagija). Workshop: Dysphagia: Diagnosis, causes, treatment and rehabilitation, 33-42. Tuzla.
4. Richter, J. E. (1998). Dysphagia, odynophagia, heartburn and other esophageal symtoms. In: Feldman, M., Sleisenger, M. H., Schaeschmidt, B. F. (eds). *Gastrointestinal and liver disease: pathopsyhology, diagnosis, management*, 6<sup>th</sup> ed. Philadelphia: Saundees, 97-105.
5. Poljaković, Z., Vodanović, D., Vranešić-Bender, D., Ljubas-Kelečić, D., Starčević, K., Kolundžić, Z., Bedeković-Roje, M., Mišir, M., Habus, S., Krznarić, Ž. (2017). Smjernice za rano prepoznavanje, dijagnostiku i terapiju neurogene orofaringealne disfagije. *Liječnički Vjesnik*, 139, 118-135.
6. Clavé, P., de Keaa, M., Arreola, V., Girvent, M., Farré, R., Palomera, E. & Serra-Prat, M. (2006). The effect of bolus viscosity on swallowing function in neurogenic dysphagia. *Aliment Pharmacol Ther.*, 9, 1385-1394.
7. Langmore, S. E., Terpenning, M. S., Schork, A., Chen, Y., Murray, J. T., Lopatin, D. & Loesche, W. J. (1998). Predictors of aspiration pneumonia: how important is dysphagia? *Dysphagia*, 13, 69-81.

8. Kalf, H., de Swart, B. J. M., Bloem, B. R. & Munneke, M. (2012). Prevalence of oropharyngeal dysphagia in Parkinson's disease: A meta-analysis. *Parkinsonism & Related Disorders*, 18, 311-315.
9. Leopold, N. A. & Kagel, M. C. (1996). Prepharyngeal dysphagia in Parkinson's disease. *Dysphagia*, 11(1), 14-22.
10. Huckabee, M. L. & Pelletier, C. A. (2003). *Management of Adult Neurogenic Dysphagia*. New York: Thomson Delmar Learning.
11. Miller, N., Noble, E., Jones, D., Burn, D. (2006). Hard to swallow: dysphagia in Parkinson's disease. *Age and Ageing*, 35, 614-618.
12. Carneiro, D., de Sales-Coriolano, M., Rodrigues-Belo, L., de Marcos-Rabelo, A. R., Guescel-Asano, A. & Gomes-Lins, O. (2015). Quality of Life Related to Swallowing in Parkinson's Disease. *Dysphagia*, 29, 578-582.
13. Clavé, P., Terré, R., de Kraa, M. & Serra, M. (2004). Approaching oropharyngeal dysphagia. *Revista Espanola De Enfermedades Digestivas*, 96, 119-131.
14. Potulska, A., Friedman, A., Krolicki, L., Sychala, A. (2003). Swallowing disorders in Parkinson's disease. *Parkinsonism & Related Disorders*, 9, 349-353.
15. Cochrane, A. L., Holland, W. W. (1971). Validation of screening procedures. *Br Med Buul.*, 1, 3-8.
16. Daniels, S. K., McAdam, C. P., Brailey, K., Foundas, A. L. (1997). Clinical Assessment of Swallowing and Prediction of Dysphagia Severity. *Am J Speech Lang Pathol.*, 6(4), 17-24.
17. Malagelada, J., Bazzoli, F., Boeckxstaens, G., de Looze, D., Fried, M., Kahrilas, P., Lindberg, G., Malfertheiner, P., Salis, G., Sharma, P., Sifrim, D., Vakil, N., LeMair, A. (2014). Dysphagia Global Guidelines and Cascades.
18. Begić, L., Duranović, M. & Jovanović-Simić, N. (2018). Osnove disfagija. Medicinski fakultet, Foča.
19. Asha. (2001). Roles of speech-language pathologists on swallowing and feeding disorders: technical report.