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DYSPHAGIA IN THE PATIENT AFTER STROKE: CONSEQUENCES AND NURSE INTERVENTION

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ABSTRACT

Objectives: to check the consequences of poststroke dysphagia and to reflect on the nurse's intervention in dysphagia rehabilitation. **Methodology**: it was performed a systematic literature review of the topic in question; research based on international databases EBSCOhost, LILACS, SciELO.We were able to identify some studies publications between 2006 and 2014. We intend to answer the guiding question: What are the consequences of dysphagia in the patient after stroke? » **Results vs. Discussion**: after a thorough analysis, we have selected 11 articles and found that the most frequent consequences of dysphagia are the pulmonary complications by saliva and/or food suction. The nurse specialist still has a barely visible role, but his/her interventions are critical in these patients rehabilitation. **Conclusions**: rehabilitation is essential to avoid the consequences of poststroke dysphagia. The rehabilitation process must go through a multidisciplinary team of which nurses are an integral and essential part.

Descriptors: Dysphagia; rehabilitation; stroke; nurse.

INTRODUCTION

It is known the importance of Cerebral Vascular Accident (CVA) as a cause of death and permanent disability as well as their special relevance in Portugal, where, as it is the leading cause of death, is a real scourge (Directorate General of Health, 2014). In Portugal in a year the CVA is responsible for the deaths of 200 of every 100,000 Portuguese people (Sá, 2009).

In 2005, the World Health Organization [WHO] defined stroke as rapidly developing of clinical signs of focal disorders (or global) in brain function, with symptoms that last more than 24 hours or leading to death, with no apparent cause that the vascular origin. The stroke corresponds to the cerebral lesion caused by acute interruption of arterial blood flow that can result from a vessel obstruction caused by an embolus/thrombus (clot) by insufficient cerebral perfusion pressure or the artery wall rupture (Silva, 2010).

The immediate causes of an acute stroke are thrombosis, hemorrhage, embolism and transient cerebral ischemia and that will always be associated with the risk factors that cannot be modified such as gender, age, race, positive family history of coronary and modifiable artery disease, such as dyslipidemia, diabetes mellitus, smoking, sedentary lifestyle, systemic arterial hypertension, obesity and stress (Araújo, Silva, Moreira & Bonilha, 2008).

"The stroke may usually be associated with five major types of deficits: paralysis and abnormal motor, sensory changes, communication disorders, cognitive and emotional disorders" (Silva, 2010, p.10). This study focuses on the changes of the motricity particularly named dysphagia.

Dysphagia is a swallowing disorder with specific symptoms and signs that are characterized by changes in any step or between the steps of the swallowing dynamics, and can be congenital or acquired (Nunes *et al.*, 2012). Thus, it is conceptualized as being a change in the swallowing process, and there may be changes in the transport of food from the mouth to the stomach.

Paixão, Silva and Camerini (2010) have considered that to properly assess the dysphagia of patient, it is necessary that his state of consciousness allows not causing him any sequel. Thus, if the state of consciousness does not allow a reliable assessment of dysphagia, it's safe to assume that the patient has full dysphagia and reevaluate it later. The incidence of dysphagia in post-stroke varies 42-67% (Itaquy *et al.*, 2011), and for Paixão *et al.* (2010), this is predominant in all patients with ischemic stroke (100%).

The most common signs of dysphagia are cough, hawking, nasal engorgement, weight loss, waste in the oral cavity and nasalized voice (Okubo, 2008). Among the most frequent complications of dysphagia there are pulmonary complications from aspiration of saliva and/or food, malnutrition, dehydration, prolonged hospitalization and death (Itaquy *et al.*, 2010).

For Nunes *et al.* (2012), it is essential that the interdisciplinary team is informed and focused on dysphagia risk after stroke. According to Teixeira (2008), cited by Jackes and Cardoso (2011), it is important that professionals working in rehabilitation have knowledge of the workings of the brain, the motor behavior and plasticity mechanisms.

The post-stroke dysphagia affects the lives of many people in different ways, leading to implications that include not only biological problems, but psychological and social problems too. Nurses need to acquire skills to carry out the evaluation of dysphagia in patients, demonstrating knowledge of complications and ensure the education of the patient, the caregiver and the family in order to leave the patient safe, preventing the consequences (Teixeira & Silva, 2009).

The rehabilitation process is unique and personal and does not end at the hospital. The success of rehabilitation depends on the continuity, coordination and the interrelationship between the health team and the patient. Living a long time with dysphagia can cause changes in the swallowing process and lead to the need to maintain a changed lifestyle, and it is this aspect that the Rehabilitation Nurse Specialist plays a central role.

Thus, we elaborated the objectives of this study: to determine the consequences of dysphagia in the post-stroke brain and to reflect on the nursing interventions in dysphagia rehabilitation.

METHODOLOGY

We held a literature research of theme in question which was independently assessed the methodological quality of each selected article; it was performed with meta-analysis. In the survey we highlighted the concepts and descriptors (Dysphagia, Post-stroke rehabilitation and nurse), and the Boolean operators "and" and "e." We used further selection criteria such as: publications between 2006 and 2014, articles written in English, Spanish or Portuguese. The survey was conducted using the international electronic databases EBSCOhost, LILACS, SciELO, PubMed, Virtual Health Library and B-on. In the beginning, the consultations with the title and abstract of the articles were later analyzed and evaluated in order to identify those which met the inclusion and exclusion criteria. After this selection, we proceeded to read the article in full, performing a deeper analysis. Thus we selected 18 articles and some of these were excluded, although all were useful for the discussion of the results because addressed post-stroke dysphagia. At the end of the research we used as the focus of our study 11 items, as were those with significant samples with objectives, main results and conclusions properly and in detail.

RESULTS

After analyzing the data presented in several studies we considered relevant to the current article, we have prepared a table which is presented in Figure 1 in order to compare the objectives of the studies, the sample, the main results and conclusions reached by the authors.

Figure 1 - Data table of analyzed studies

Study	Sample	Objectives	Main results/conclusions
(E1) Nunes, M., Jurkiewicz, A., Santos, R., Furkim, A., Massi, G., Pinto, G., & Lange, M. (2012). Correlation between brain injury and dysphagia in adult patients with stroke. International. *Archives. Otorhinolaryngology.*	30 patients with CVA, 18 are female and 12 male, ages ranged between 30 and 86 years-old. It was performed at the Hospital of the Universidade Federal do Paraná	*To correlate brain damage with dysphagia in patients with stroke, considering the type and location of the stroke.*	As a result there was a predominance of oral dysphagia in patients with lesions in the cerebral cortex and subcortical of the ischemic type.
(E2) Benigno, M., Andrade, A., Gondim, F., & Amador, D. (2011, jun). Evaluation of nursing care for patients with sequel of ischemic stroke. *Revista enfermagem UFPE online.*	12 nurses working in the Medical Clinic of the Regional Hospital in Cajazeiras, Brazil to whom was applied a questionnaire in May 2010.	*- To evaluate the care provided by nurses to patients with sequel of ischemic stroke; - To investigate the knowledge of nurses in relation to this disease.*	Most nurses provided satisfactory and proper way to care. Good practice of nurses should be encouraged and should be given appropriate conditions for such care is provided more effectively.
(E3) Jacques, A., & Cardoso, M. (2011). Stroke and speech therapy sequels: performance in hospital area. *Revista Neurociência.*	26 patients, aged between 48 and 77 years-old of both genders with a diagnosis of stroke, hospitalized in Hospital Parque de Belém, in the period from March to May 2007.	*To conduct a survey of the possible speech therapy of patients hospitalized for stroke in the wards of Hospital Parque de Belém, and it is designed directly to the expansion of knowledge of public health professionals and helping them in future referrals and care to this population, given the importance of professional speech against this sequel.*	It relates stroke with variable dysphagia and normal swallowing. From patients with stroke it was found that 42.3% have dysphagia and 30% have language disorder, as there was a high prevalence with respect to deglutition and language problems.
(E4) Itaquy, R., Favero, S., Ribeiro, M., Barea, L., Almeida, S., & Mancopes, R. (2011). Dysphagia and CVA: relationship between the degree of severity and the level of neurological behavior. *Sociedade Brasileira de Fonoaudiologia.*	Three patients: a males and two females; average age - 65 years old and 6 months; admitted to the emergency of a hospital complex in Porto Alegre; from June to September 2010.	*To verify the occurrence of dysphagia after acute ischemic stroke during the first 48 hours of appearance of the symptoms, for establishing a possible relationship between the level of neurological and degree of severity of dysphagia.*	From patients evaluated, two had mild to moderate oropharyngeal dysphagia. The study found no relationship between the severity of neurological status and the manifestation of dysphagia.

Figure 1 - Data table of analyzed studies

Study	Sample	Objectives	Main results/conclusions
(E5) Guijarro, L., García, V., Fernández, N., Pozo, C., Nebreda, L., & Serra-Rexach, J. (2011, may-june). Oropharyngeal dysphagia in elderly patients admitted to a nursing. *Nutrición Hospitalaria*.	86 patients (60% females), mean age, 83 years and 8 months-old, with a prevalence of oropharyngeal dysphagia in hospital of sub-acute unit in geriatrics service of Hospital Universitário General Gregório Marañón, Madrid, Espanha	*To describe the prevalence of oropharyngeal dysphagia in hospital discharge of hospitalized elderly in a sub-acute unit using method of clinical volume-viscosity evolution and an adapted version in severe dementia.*	Dysphagia has a high prevalence in the group of hospitalized elderly. The clinical method of assessing the volume-viscosity detected high prevalence of dysphagia recommending the use of the evaluation routine particularly in risk patients, taking into account the peculiarities of their use in the elderly. This population is at risk, and they're defined by characteristics such as cognitive and/or functional deterioration.
(E6) Oliveira, A., Costa, A., Chaves, D., Alves, F., Moreiras, R., & Araújo, T. (2011). Assessment of functional ability of elderly patients with cerebrovascular accident. *Revista de enfermagem UFPE*	Patients older than 18 years-old. Diagnosis of cerebrovascular accident, which were attended by the Family Health Strategy, in Associações Beneficiantes Cearenses de Reabilitação tion and all units of Fortaleza, from October 2006 to November 2007.	*To evaluate functional capacity of elderly patients after stroke.*	It is essential to invest in academic training and in the training of nurses. The maintenance of functional capacity becomes a multidisciplinary activity, consisting of doctors, nurses, physiotherapists, occupational therapists, social workers and psychologists.
(E7) Cola, M., Daniels, S., Corey, D., Lemen, L., Romero, M., & Foundas, A. (2010). Relevance of Subcortical Stroke in Dysphagia. *StrokeAHA*	20 patients between June 2003 and August 2005 in New Orleans.	*Determining the occurrence of dysphagia in subcortical cerebrovascular accident stroke and identifying characteristics of dysphagia.*	The results found suggest that the sub-cortical connections of white matter are important in swallowing and if there is disruption of cortical-subcortical connections can result in dysphagia.
(E8) Silva, E. (2010). Rehabilitation after stroke [Monograph]. Porto: Faculdade de Medicina. Área de medicina comunitária.	Data for the study were removed from *National Stroke Association*	*To address the deficits resulting from each professional manner may intervene in the rehabilitation and how it handles the connection between them.*	Rehabilitation programs should always be holistic programs, developed by a multidisciplinary team.

Figure 1 - Data table of analyzed studies

Study	Sample	Objectives	Main results/conclusions
(E9) Okubo, P. (2008). Dysphagia detection in acute ischemic stroke. Proposition of conduct based on the characterization of risk factors [Doctoral Thesis]. Ribeirão Preto: *Faculdade de Medicina. Departamento de neurologia e neurociências.*	50 patients, 25 female and 25 male, aged between 26 and 91 years-old. The survey was conducted at the Emergency Unit of the Hospital of Medical School of Ribeirão Preto.	*To identify risk factors for dysphagia and to propose the safest way of feeding in acute ischemic stroke.*	The results show that dysphagia is a frequent manifestation in acute cerebral ischemic stroke. The age, NIHSS, ECG, changes in speech, language changes and topography of lesions are predictive factors of dysphagia.
(E10) Gonzalez-Fernandez, M., Kleinman, J., Ky, P., Palmer, J., & Hillis, A. (2008). Supratentorial Regions of Acute Ischemia Associated With Clinically Important, Swallowing Disorders: A Pilot Study. *Stroke AHA.*	29 patients with ischemic stroke for the first time and without a history of dysfunction of swallowing between 2001 and 2005.	*To identify the interest of the supratentorial region that may be related to clinically important dysphagia in patients with acute stroke, focusing on the subcortical structure.*	From the patients in a state there was a greater probability of finding dysphagia in patients with impaired internal capsule. Dysphagia is defined as dysfunction swallowing identified during the evaluation of swallowing in the dietary modification was necessary.
(E11) Barros, A., Fábio, S., & Furkim, A. (2006). Correlation between clinical evaluation of swallowing and the findings of computed tomography in patients with stroke. *Neuropsychiatry files.*	27 patients with a mean age of 60 years, 56% of males and 44% female. The survey was conducted in the Emergency Unit of Medical School of Ribeirão Preto.	*To determine whether there is a correlation between the location of the location of vascular lesion brain and difficulty swallowing in patients with ischemic stroke.*	From the patients studied, the left hemisphere was affected in 50% of those with functional swallowing and 46% of dysphagia. The hemispheric location is not associated with the presence of dysphagia. The presence of dysphagia was observed more frequently in females.

DISCUSSION

The main dimensions that emerged from the review conducted were: The dysphagia associated with CVA type, the Importance of formation and good practice of the nurse, and Rehabilitation Program. We will then address each of them.

Dysphagia associated with CVA type

As a term CVA "means the sudden impairment of brain function caused by numerous histopathological changes involving one or more intracranial blood vessels (...). After stroke, some patients are still lucid, while others may show mental confusion, delirium, amnesia, drowsiness or coma" (Lima, Caetano, Soares & Santos, 2006, p.149). It was found in one study that there is a higher prevalence of CVA in male patients (Oliveira *et al.*, 2011). Major stroke risk factors are studied and described in several studies.

Dysphagia defined as swallowing dysfunction was identified during the evaluation of swallowing. Resulting from this change, dietary modification was necessary so that the patient can swallow effectively and safely (Gonzalez-Fernandez, Kleinman, Ky, Palmer & Hillis, 2008).

According to Okubo (2008), the presence of dysphagia was found in 32% of cases of CVA checked, while Jackes and Cardoso (2011) found that this percentage amounted to 42.3% in the study of Barros, Fabio and Furkim (2006), reached 48%, and in a study of Cola *et al.* (2010) 50%. It appears that the prevalence of this sequel is high in post-stroke and requires multiple nursing care. It is considered post-stroke morbidity and its expression is associated with increased risk of lung complications and own mortality, hence the importance of making an early diagnosis of this sequel (Itaquy *et al.*, 2011).

In the study developed by Itaquy *et al.* (2011), dysphagia occurs mostly in patients exhibiting problems in middle cerebral artery (anterior circulation area), as found in the study of Barros *et al.* (2006) in 76% of cases. According to Cola *et al.* (2010), the subcortical white matter connections are important in swallowing and if there is disruption of cortical--subcortical connections can result in dysphagia. In this study, dysphagia occurred in 1/3 of the cases, after subcortical acute stroke (Cola *et al.*, 2010). This assertion can be confirmed in the study of Gonzalez-Fernandez *et al.* (2008) in which in the subjects of study there was a greater probability of finding dysphagia in patients with impaired internal capsule. With regard to the cerebral hemisphere where there is a higher prevalence of dysphagia, 1/3 of cases of dysphagia the lesion was in the left hemisphere and 56.25% of cases of the injury was in the right (Cola *et al.*, 2010; Okubo, 2008). Barros, Fabio and Furkim (2006)

concluded that the hemispheric location is not associated with the presence of dysphagia, or cannot associate the presence of dysphagia in the hemisphere in which the stroke occurred. Thus, we cannot conclude that what hemisphere is more likely to cause dysphagia.

Dysphagia is a symptom that predominates in the age group between 60 and 79 years-old and it is prevalent in the female [76.47%] (Teixeira & Silva, 2009). In the study by Barros, Fabio and Furkim (2006) it was found that 62% are in females. It appears also that the prevalence of dysphagia for liquids is 71% with respect to solids was 44% and 38% of soft food (Teixeira & Silva, 2009).

There is a predominance of oral dysphagia in patients with lesions in the cerebral cortex and subcortical of ischemic type (Nunes *et al.*, 2012). We conclude that in relation to patients with stroke 42.3% had dysphagia and 30% disturbance of the language, so there was prevalence in relation to problems swallowing and language (Jackes & Cardoso, 2011). And there is a relationship between aphasia and dysphagia in 68.75% of the verified cases (Okubo, 2008).

It is essential to evaluate the pasty food dysphagia before the fluid it is also very important to match the diets in order to prevent future complications and reduce the risk of aspiration. It is found that dysphagia patients often develop disturbance of consciousness and respiratory infections (Guijarro *et al.*, 2011).

There is an undeniable relationship between functional status and dysphagia. Patients with dysphagia have worse performance status and are more immobilized thus this variable can be regarded as a risk factor of dysphagia in elderly hospitalized (Guijarro *et al.*, 2011). The same study indicates that dysphagia may be considered a risk factor of functional decline for the patient and concludes that dysphagia has a high prevalence in the group of elderly hospitalized. The clinical method of assessing the volume-viscosity detected high prevalence of dysphagia recommending the use of the evaluation routine in particular in risk patients, taking into account the peculiarities of their use in the elderly. The same study concluded that the functional deficiencies and specifically the fact that the patient is bedridden and therefore unable to maintain the posture of sitting, causes and/or worsening dysphagia (Guijarro *et al.*, 2011).

There was a directly proportional relationship between neurological status and dysphagia, they concluded that in most cases this sequel begins to manifest itself in a score of 12 in the National Institute of Health Stroke Scale [NIHSS] (Itaquy *et al.*, 2011). The score from which the food should not be sick orally is 14 (Okubo, 2008). This fact is corroborated by the study of Guijarro *et al.* (2011), in which there was a prevalence of 90.9% of dysphagia in patients with moderate to severe dementia.

The importance of formation and good practice of the nurse

After analysis of a study, Oliveira *et al.* (2011) concludes that it is essential to invest in academic training and in the training of nurses. The maintenance of functional capacity becomes a multidisciplinary activity, consisting of doctors, nurses, physiotherapists, occupational therapists, social workers and psychologists (Oliveira *et al.*, 2011). In addition to this multidisciplinary team, it is essential that in post-stroke rehabilitation, there is an involvement of the patient, family and friends (Silva, 2010).

It is very important the role of nurses in providing care for patients who have dysphagia. It was found in the survey that the majority of nurses care satisfactory and correctly (Benigno Andrade, Gondim & Amador, 2011). The good practice of nurses should be encouraged and should be given appropriate conditions for these practices remain.

Nutrition plays an important role in post-stroke re-habilitation; a nurse must be aware and foster this aspect. Nutrition and especially the quality of nutrition should be part of an individualized care plan and oriented to the real patient's needs. The nurse, from a patient with dysphagia should assess the state of nutrition and hydration regularly. A safe swallowing through placements, therapeutic maneuvers and adequacy of the diet should be provided (WHO, 2005).

Although the evaluation of dysphagia requires an interdisciplinary approach, the nurse plays an important role in monitoring and observation of the patient. According to the Nurses Order skills (2010), it is responsible not only for maintaining and promoting the well-being as the supervision of meals for patients. Another practice to take into account is the periodic reassessment of the patient so that update the care plans and implement comprehensive measures to adapt to dysphagia.

Rehabilitation Program

Rehabilitation aims to enable individuals with deficits to improve their physical, intellectual, psychological and social functions (Silva, 2010). It comprises a program during which the patient progresses into or maintains the maximum degree of independence. The same author also states that through post-stroke rehabilitation the patient regains capabilities and re-learns to perform certain tasks to compensate residual dysfunction.

The rehabilitation nurse plays a major role in an interdisciplinary approach in monitoring and observation of patients with dysphagia, both in patients in acute phase and in their follow-up continues. Using tools to assess the degree of dysphagia as the GUSS test, range (PAS), TOR-BSST test, according to the studies analyzed, when using these tools it is noted the advantage of being able to evaluate the capacity of swallowing substances of different

consistency, resulting in bringing the eating habits of the patient's daily life, allowing safely adjust the their diet (Cardoso *et al.*, 2011). It is also important to note that the studies analyzed by these authors did not reach consensus on the consistency of the substance that begins the swallowing test because dysphagia is presented higher in liquids, but has less effect on the vacuum, in terms of respiratory infection (Marques, André & Rosso, 2008 cited by Cardoso *et al.*, 2011).

There is a health gain to be identified early and establish an intervention tailored to swallowing difficulties, helping to prevent sequel and complications (pneumonia or pulmonary edema) that may result from post-stroke dysphagia (Cardoso *et al.*, 2011).

According to Silva (2010), rehabilitation programs should always be holistic programs and developed by a multidisciplinary team. With regard to Nurses with Rehabilitation expertise, they, help patients to regain the skills in order to perform their activities of daily living (ADL), educate patients on their health routine, thereby reducing complications. It is also claimed that the patient after stroke to accomplish the most basic AVDs (Hygiene, Dressing up and disposal) to "give" the first step towards achieving functional independence (Silva, 2010). With regard to dysphagia, the objectives in assessing the patient's dysphagia are: to detect, to classify its severity, to determine the causes and to plan the rehabilitation program (Maccarini *et al.*, 2007, cited by Cardoso *et al.*, 2011).

Nursing care of the patients with stroke sequel is a major problem in developing countries, but the control principles are the same worldwide, with effective assistance considered the main approach to the Nurse (Benigno *et al.*, 2011). The study mentioned above believes that nurses have functions of rehabilitation in post-stroke and in the development of an interdisciplinary process that favors the planning, implementation and evaluation of therapeutic measures.

The rehabilitation specialist nurse has a key role in terms of teaching, for example in the training of swallowing, indicating the type of food and its consistency, to be more easily swallowed (Silva, 2010). Thus, the purpose of rehabilitation of dysphagia is to stabilize the nutritional aspect and to eliminate the risk of pulmonary aspiration and subsequent complications, the variation of peripheral oxygen saturation before and after food intake was observed on the part of post-stroke patients, and this variation was 30.8% (Jackes & Cardoso, 2011).

CONCLUSION

To accomplish this, we found the lack of publications available, in the time that we selected, on the subject under study, which is also felt by another literature review study that addresses this issue (Cardoso *et al*., 2011). Taking into account the goals set for the development of this literature, dysphagia, - according to the studies - is common in post-stroke, affecting the well-being, not only physical but also psychological and social of patient. That's why importance of rehabilitation process in dysphagia goes through a multidisciplinary team. We can also conclude, based on all the studies consulted, that rehabilitation is essential to prevent complications of dysphagia, stabilizing nutritional status and eliminating the risk of aspiration - aspiration pneumonia. It is also important to note that in the rehabilitation of patients with dysphagia, it is essential to rely on scales for their measurement.

This work confirms that it is essential the participation of nursing in the rehabilitation process of patients that have dysphagia after stroke. It is important to note that dysphagia when prejudice the achievement of daily activity feed, has a negative impact on patient recovery. It must be a target that deserves high attention by health professionals.

It is essential to give emphasis to the strategies used and the deepening of knowledge in this area of research to contribute to an improvement in the patient's quality of life.

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