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EARLY EVALUATION OF DEGLUTITION IN PEOPLE WITH STROKE

Susana Velhinho Casteleiro de Góis – MSc, Nurse at the Baixo Alentejo Local Health Unit

Rogério Ferrinho Ferreira – PhD, Coordinating Professor of the Polytechnic Institute of Beja School of Health: Department of Health

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ABSTRACT

Objective: to identify the degree of dysphagia in people affected by a stroke.

Method: a quantitative, descriptive and cross-sectional study, developed at a medical service of the University Hospital Center of the Algarve, during a period of 10 weeks, from October to December 2017, involving 20 people with stroke. The instruments used were the Glasgow Comas and Gugging Swallowing Screen (GUSS), always applied by the same nurse. A descriptive analysis was used.

Results: of the evaluation with the GUSS Scale, 50.0% of the patients had absent dysphagia with minimal risk of aspiration, 10.0% presented mild dysphagia with low aspiration risk and the rest showed moderate and severe dysphagia with a higher risk of aspiration.

Conclusions: the intervention of the Rehabilitation nurse proved to be determinant in the early diagnosis of swallowing and therefore, in the prevention of complications associated with dysphagia, aiming to promote swallowing in safety.

Keywords: Stroke; rehabilitation nursing; swallowing disorders.

INTRODUCTION

Stroke is one of the most frequent pathologies as a cause of hospitalization. This pathology is sudden, appears more frequently in individuals with cardiovascular risk factors and affects a specific area of the brain, producing signs and symptoms, according to the affected area.

Stroke is the main neurological cause of dysphagia and a high percentage of people present this dysfunction in the first 3 days of hospitalization.

Dysphagia consists of difficulty in swallowing and can be manifested by increased time spent at meal, periods of coughing during meals, difficulty in swallowing saliva, excessive secretions in the trachea, recurrent pneumonia or weight loss[1,2].

Oropharyngeal dysphagia is a serious and very frequent symptom in people with strokes and other neurological disorders[3].

The presence of dysphagia in patients with stroke has been associated with nutritional and pulmonary complications. These complications are reflected in a person's quality of life, social isolation, increased mortality, and overall health costs[2,4].

Aspiration pneumonia is considered, in patients with dysphagia of neurological origin, to be the most common cause of increased mortality[3]. Deaths occurring after acute stroke are associated with pneumonia[4]. In this sense, the need for an early diagnosis of compromised swallowing/dysphagia emerges, in order to avoid that the person in a stroke situation with dysphagia becomes a silent "aspirator" without clinical manifestations. The early diagnosis of dysphagia in patients with stroke, as a way of preventing complications associated with aspiration, decreases the number of days of hospitalization and increases the life expectancy of patients[5]. Through early diagnosis it is possible to establish preventive measures in order to ensure the prevention of respiratory infections and all costs that are implicit[6].

The nurse specialist in rehabilitation nursing (NSRN) has the skills to prepare an early diagnosis and implement a rehabilitation nursing plan, with interventions that ensure the prevention of complications and disabilities[7].

The early assessment of swallowing in the person with stroke involves a structural assessment based on an objective examination and a functional assessment of swallowing by applying a swallow evaluation scale. This evaluation is structuring in the definition of a functional re-education plan of individualized deglutition.

The collection of information obtained from the person with a stroke/family/caregiver together with the collection of information obtained in a clinical diary is fundamental, as it allows us to identify changes that may compromise the swallowing dynamics[7].

The structural evaluation of swallowing is based on the physical examination and an evaluation of the cranial pairs involved in the deglutition process. This information allows us to identify changes that compromise the swallowing dynamics[8].

The physical examination of the person is to evaluate the control of the head in the sitting position, the symmetry of the face, color, moisture and symmetry of the lips, salivation, the ability to close the lips firmly and open the mouth, mucosa of the oral cavity and tongue, the lacerations resulting from chewing, the state of the teeth and gums and in case of prosthesis verify their adaptation[8].

The cranial pairs with the greatest influence on the swallowing process are the trigeminal (V), the facial (VII), the glossopharyngeal (IX), the Vagus (X) and the great hypoglossus (X)[9]. Table 1 shows the consequences of the lesions in these cranial nerves.

Table 1 – Changes in Cranial Paresthesia.

Cranial Pairs	Consequences
Triplet(V)	• Loss of tactile sensitivity on the face; • Weakness when biting or clenching the jaw; • Pain in the eye region, nose, mouth, teeth and tongue.
Facial (VII)	• Facial paralysis; • Loss of gustatory sensation in the anterior two thirds of the tongue; • Decreased salivation.
Glossopharyngeal (IX)	• Difficulty in swallowing; • Loss of gustatory sensation in the posterior third of the tongue; • Deviation of uvula; • Decreased salivation.
Vagus (X)	• Difficulty in swallowing; • Deviation from the uvula to the non-committed side; • Hoarseness.
Hypoglossus (XII)	• Ipsilateral weakness of tongue; • Protrusion of the tongue - deviation to the side of the lesion.

Source: Vanputte, Regan, Russo[9].

Most people with acute stroke have a greater difficulty in swallowing fluids than semi-solid textures. Therefore, the GUSS scale was selected for the evaluation of swallowing. This scale correlates the degree of dysphagia with the risk of aspiration, as well as indicates recommendations for each degree of dysphagia. It should be noted that this scale does not require complex training[6,10].

Functional re-education of swallowing is performed according to the changes identified through the structural and functional evaluation of swallowing. Postural techniques, sensory stimulation, voluntary changes in swallowing, respiratory functional reeducation, diet adequacy, and muscle amplitude and strengthening exercises[11].

Postural techniques allow the person to assume the correct position when feeding. Cervical flexion, cervical extension, rotation from the cervical to the affected side and lateral flexion to the unaffected side are considered postural techniques[11]. Sensory stimulation promotes excitability at the level of nerve centers and in parallel influences the cortical mechanisms of swallowing. This type of stimulation can be affected through the change of flavors, the volume and texture of the food bolus and the temperature[11].

Extensive and muscular strengthening exercises can be performed on the lips, tongue, jaw, larynx and cheeks[11].

The adequacy of diet depends on the change in texture. The diet should be adequate to the person through the presented changes, in the clinical evaluation of swallowing[8].

Respiratory functional re-education must be started in a preventive way to avoid the risk of aspiration[11].

Parallel to these interventions, there is transversal care for the person with dysphagia, and the specialist nurse must take into account the person's state of consciousness, his position, the disposition of food on the table, the use of support material, noise during the meal, the availability during the meal, the positioning of the person after the meal and oral hygiene[8].

Thus, assuming that swallowing is a complex process, since it involves voluntary activities and reflexes that allow the passage of food, without compromising the airways, from the oral cavity to the stomach, and in situations of stroke, this condition may be altered resulting in respiratory complications, and considering that the NSRN may play a relevant role in the evaluation and re-education of the person with this type of alteration, we defined the following guiding question in this study: What is the degree of dysphagia in people affected by a stroke?

In this context, we defined as objective for this study:

- Identify the degree of dysphagia in people affected by a stroke.

We believe that the results of this study can be an important contribution to the reflection on this problem and the relevance of the specialized rehabilitation nursing intervention, with a high level of clinical judgment and decision making in the evaluation of swallowing to the person with stroke, aiming the implementation of intervention plans tailored to the needs and problems of each person, in order to ensure the prevention of complications and the promotion of safe and effective swallowing.

METHOD

A quantitative, descriptive and cross-sectional study developed at a medical service of the University Hospital of the Algarve during a period of ten weeks, from October to December 2017.

The selection of subjects for this sample was based on the following inclusion criteria: having the diagnosis of stroke, having age ≥ 65 years and a score> 11 points on the Glasgow Coma scale. The following exclusion criteria were also considered: diagnosis of stroke-associated pneumonia and history of neoplasia, because they presented nasogastric tube for feeding and hydration.

During the abovementioned period, twenty-two persons with a diagnosis of stroke were admitted; however, two were excluded because they previously required a nasogastric tube for feeding and hydration (antecedent of laryngeal and stomach neoplasia). The remaining twenty people were included in this accidental sample, having undergone swallowing evaluation.

As can be seen from Table 2, which summarizes the aspects related to the characterization of the people who participated in this study, this sample is made up of people aged between 70 and 93 years old and predominantly male. People with ischemic stroke prevail and, among their personal antecedents, hypertension.

Table 2 – Sample Characterization.

Age	70-75 years: 4 (20%)
	76-81 years: 7 (35%)
	82-87 years: 6 (30%)
	88-93 years: 3 (15%)
Gender	Male: 13 (65.0 %)
	Female: 7 (35.0 %)
Type of stroke	Ischemic stroke: 17 (85.0 %)
	Hemorrhagic stroke: 3 (15.0 %)
Personal background	Arterial hypertension: 15 (75.0 %)
	Dyslipidemia: 5 (25.0 %)
	Benign Prostatic Hypertrophy: 5 (25.0 %)
	Atrial Fibrillation: 2 (10.0 %)
	Type II Diabetes Mellitus: 4 (20.0 %)
	Smoking: 1 (5.0 %)

Source: Research Data, 2017.

The instruments used in this study were the Glasgow Coma and GUSS scales, always applied by the same nurse.

The GUSS scale is specific for people with stroke, it relates the degree of dysphagia with the risk of associated aspiration. It is a validated scale adapted to the Portuguese context, presenting an internal consistency of 0.80 in the direct phase and 0.82 in the indirect phase. Inter-observer agreement ranged from 0.818 to 0.905. The sensitivity was 100% and the specificity was 43% and 56% (for cutoff point 13.50 and 4.50)[6].

This scale is divided into two stages, the first one being called an indirect test of swallowing and the second one being a direct test of swallowing[1,6,12].

The first stage of the evaluation is based essentially on three key points: vigilance, coughing and/or throat swallowing, and swallowing is subdivided into swallowing successfully, sialorrhea and voice change. Surveillance refers to a person's alertness. In this way, the evaluation of the state of consciousness through the Glasgow Coma Scale was performed, since the person has to remain alive for 15 minutes. The maximum score of this step is five points. Whenever the final score is below the maximum, the person has severe dysphagia with a high risk of aspiration. The maximum score allows the person to move to the second stage of the scale.

The second phase is subdivided into three substeps, each corresponding to a consistency. The first consistency to be evaluated is the semi-solid (food of pasty consistency), the second is the liquid (3, 5, 10, 20 and 50 ml of water) and lastly the solid (pieces of bread humidified). Each sub-stage is evaluated based on the following warning signs: Deglutition (swallowing not possible, late swallowing and successful swallowing); Involuntary cough, sialorrhea, and voice change. The evaluation is performed sequentially in order to obtain a maximum score in each sub-step of five points. Whenever the person does not present the maximum score in a sub-step he cannot proceed to the next one without first identifying the cause. The higher the score in each sub-step, the better the deglutition performance[6,12].

After the application of the scale, a score is obtained that determines the degree of dysphagia with associated aspiration risk, the consistency that the person presents as well as the recommendations indicated according to the degree of dysphagia, according to the flow chart of the GUSS scale (Figure 1).

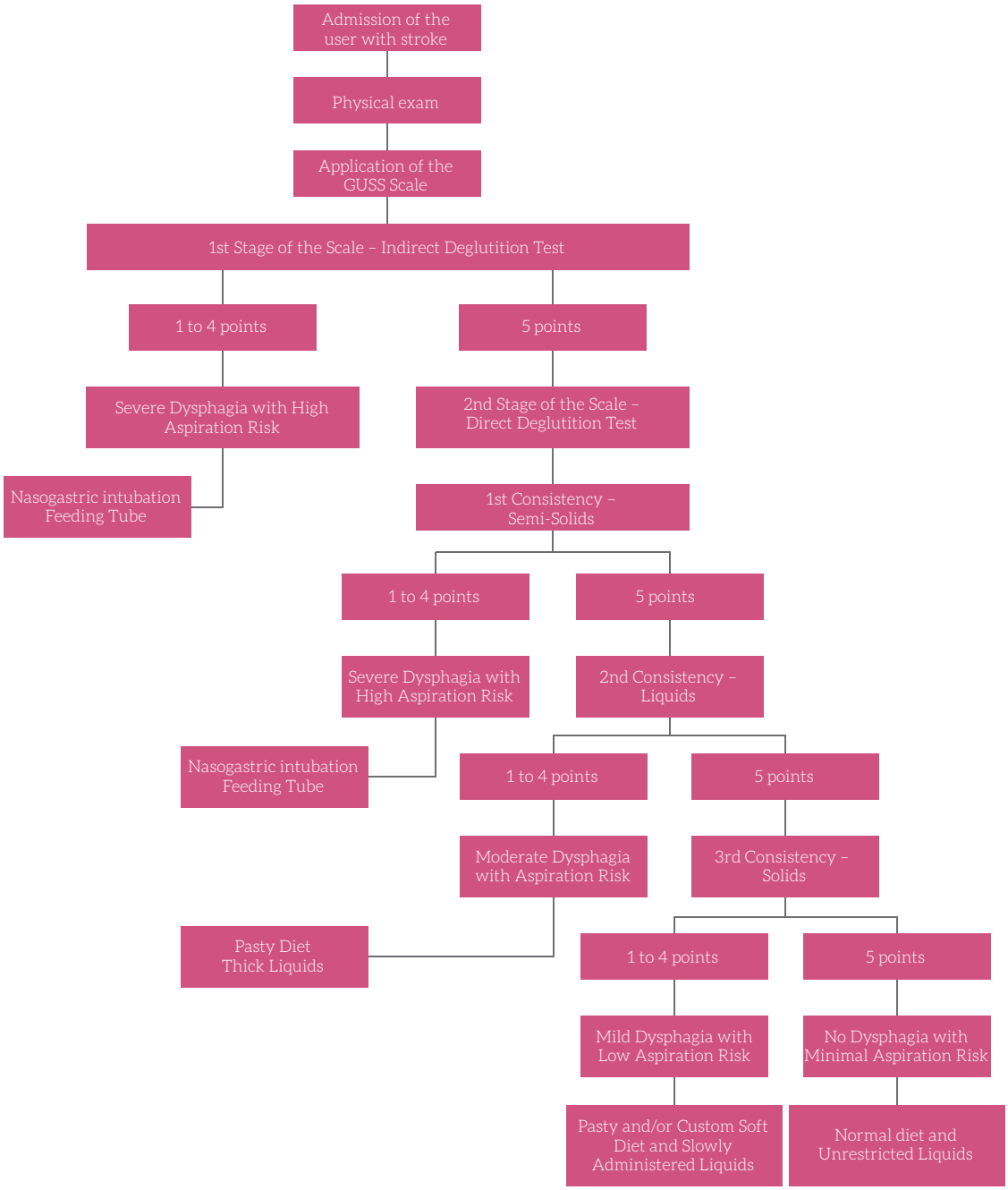

Figure 1 – GUSS scale application flowchart.
Source: Authors.

Swallowing is considered normal/without dysphagia with minimal risk of aspiration whenever the score is 20 points. When the score is between zero and 19 points, swallowing is compromised, defined as mild dysphagia with low aspiration risk, when the score is between 15 and 19 points, moderate dysphagia with risk of aspiration, when the score is between ten and 14 points, and for serious cases with a high aspiration risk, when the score is between zero and nine points[12].

The evaluation of the GUSS scale contemplated a durability of between 30 and 50 minutes. This durability integrates the preparation time of the material and the collaboration of the person.

The accomplishment of this study involved a set of ethical procedures. It was conducted within the standards required by the Declaration of Helsinki and approved by the Ethics Committee - Health and Welfare Area of the University of Évora and Board of Administration of the Hospital and University Center of the Algarve. Informed consent was given to the people involved in the study. The person and the caregiver were explained the purpose of the study, its importance for the improvement in the quality of care, as well as being informed of the confidentiality of the information obtained and the anonymity.

RESULTS

Structural Evaluation

Before the evaluation of swallowing, the objective exam was carried out, to the people who integrated the sample, based on a structural evaluation. According to the data explained in Table 3, we can see that the changes with greater evidence are the deviation of the labial commissure, the lack of labial holding with the spatula and the alteration of the dentition.

Table 3 – Structural Evaluation Results.

Objective exam	No.	%
Deviation of the labial commissure	11	55.0
Change in Lip pressure	8	40.0
Teething modification	7	35.0
Change in Inflation of the Cheeks	3	15.0
Change in Tongue Mobility	3	15.0
Seborrosa Tongue	3	15.0
Change in Head and Neck Control	3	15.0
Mandibular Mobility Change	2	10.0
Absence of Intraoral Sensitivity	2	10.0

Source: Research Data, 2017.

Functional Deglutition Evaluation

In functional terms, swallowing assessment was performed based on the GUSS scale. Before the evaluation of swallowing was carried out, the surveillance status was first evaluated, since the person had to be alive for 15 minutes. In this way, the assessment was made to all people through the Glasgow Coma Scale. The sample had a score between 13 and 15, with a predominance of people with a score of 15 (55.0%).

Of the twenty people in the study, four (20.0%) had a score <5 points on the GUSS scale, and were retained at this stage because of severe dysphagia with a high risk of aspiration. The remaining sixteen (80.0%) showed a score of 5 points that allowed the passage to the second phase of the GUSS scale. Ineffective ingestion of saliva, sialorrhea, and voice change were the most serious signs of severity for people who had severe dysphagia with a high risk of aspiration and a score of less than five points.

The evaluation of the second phase of the GUSS scale determined a score that, together with the score obtained in the first phase, defined the degree of dysphagia, aspiration risk and unsuccessful textures.

Of the individuals who underwent GUSS Scale evaluation, 50.0% of them had absent dysphagia with a minimum risk of aspiration (score of 20 points), 10.0% had mild dysphagia with a low aspiration risk (score between 15 and 19 20.0% had moderate dysphagia with risk of aspiration (score between ten and 14 points) and 20.0% had severe dysphagia with a high risk of aspiration (score between zero and nine points).

The two individuals (10.0%) who presented mild dysphagia with low aspiration risk demonstrated compromised swallowing for solids. The remaining four (20.0%), who presented moderate dysphagia with risk of aspiration, presented compromised swallowing for liquids.

Delayed swallowing, coughing and/or throat clearing, were the most prominent warning signs for people who had dysphagia for liquids. People with dysphagia for solids showed delayed swallowing, sialorrhoea and change in voice (Table 4).

In parallel to the evaluation of the GUSS scale, the presence of secretions, monitoring of peripheral oxygen saturation and temperature was observed, with the individuals presenting normal values, which are oxygen saturation between 95 and 99%, temperature between 36 and 36.9°C and absence of secretions.

Table 4 – Signs of Severity according to Committed Consistency.

Signs of Severity	Consistency			
	Liquid		Solid	
	N.º	%	N.º	%
Deglutition delay	4	20.0	2	10.0
Coughing and/or sniffing	1	5.0	0	0.0
Sialorreia	0	0.0	2	10.0
Change of voice	0	0.0	2	10.0

Source: Research Data, 2017.

DISCUSSION

The aim of this study was to identify the degree of dysphagia in people with stroke in order to prevent complications associated with dysphagia, namely aspiration pneumonia, and concomitantly ensure a swallowing in safety.

In this sense, nurses, specifically Rehabilitation nurses, are professionals with the skills to assess swallowing, monitor the problematic situation of the person with stroke and their family[13] and develop an intervention plan adjusted to their needs.

The nurse of Rehabilitation, to intervene, only needs an evaluation method, which must be adequate to the characteristics of the study sample[14]. Thus, the swallowing evaluation was performed, through the GUSS scale, to all people with a diagnosis of stroke admitted to this care unit.

When the GUSS scale was applied to this sample, it was observed that 50% of the people had dysphagia absent and the remaining 50% dysphagia, and 10% had mild dysphagia, 20% moderate dysphagia and 20% severe dysphagia. In another study[6] using the GUSS scale, 52.87% did not present dysphagia, 14.37% had mild dysphagia, 17.24% moderate dysphagia, and 15.52% had severe dysphagia.

The results obtained through the use of this instrument allowed an early diagnosis and, through this, made possible the implementation of an individualized rehabilitation nursing plan, with therapeutic interventions that assure and improve the functional capacity of the person with dysphagia, versus risk aspiration, and prevent complications associated with dysphagia. This plan may involve the adequacy of diet and administration, thickened liquids, medication administration, positioning of the person during meals, orofacial exercises, functional respiratory re-education exercises, swallowing facilitation maneuvers, and systematic reevaluation of swallowing[8].

Safe deglutition lies not only in the adaptation of modified/specialized diets to the person with swallowing changes, but also in adapting their texture to the needs of the person, and in the implementation of a therapeutic rehabilitation program, bearing in mind that food administration and liquids, are the most important aspects in the rehabilitation of dysphagia of the person with stroke, since they reduce the risk of aspiration[15].

Given the results presented, it is important to note that the use of the GUSS scale optimizes the definition of the NSRN intervention plan and, inherently, helps in reducing the complications associated with dysphagia, namely aspiration pneumonia, the person with dysphagia, a safer deglutition[15].

CONCLUSION

In summary and in view of the objective for this study, which allowed the identification of the degree of dysphagia in these people with stroke, it was evident that the intervention of the Rehabilitation nurse is determinant in the early diagnosis of swallowing compromised by the applicability of specific instruments for this evaluation. The intervention of the NSRN was fundamental in the evaluation of the swallowing of the person with stroke and through this, it is determinant in the prevention of complications associated with dysphagia and in the implementation of a program of reeducation of the person, with specific care and adjusted to the necessities to foment a swallowing in safety.

Given the relevance of the intervention of the Rehabilitation nurse in the assessment and the development of specialized care for the person with stroke and with swallowing impairment, it is essential that health institutions value the role of the NSRN and that the application of these evaluation instruments be assumed as[16] for the provision of quality care duly framed in institutional protocols.

It is essential that the training plans in the different health institutions value the application of the evaluation tools to detect changes in swallowing and the implementation of intervention plans adjusted to the degree of dysphagia in people with stroke. Although the practical contexts are assumed as the structuring axis for the identification of training needs for nursing professionals, the curricula of specialized training should take a greater role in addressing these issues and in the development of this type of professional skills.

The development of studies of this nature and research projects are fundamental for the development of the knowledge related to nursing care to the person with stroke and the risk of dysphagia. There is a need for a change in the action and research culture of the different actors involved in this care, and in particular of nurses, in order to reconcile practical knowledge about these themes and their research skills.

Regarding the relevance of this issue to the development of quality care for the person with stroke, we believe that it is essential that there is a commitment of higher education institutions and health institutions in the valuation of training and research around this set of knowledge.

In this study, developed with a descriptive methodological approach, we highlight as limitations, the weakness of the design to demonstrate the existence of causal relations and the difficulty of external validation linked to the type of sampling.

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Correspondence: ferrinho.ferreira@ipbeja.pt