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Speech-language pathology performance in patients with acquired immunodeficiency syndrome and complaint of swallowing – retrospective analysis of medical records

Atuação fonoaudiológica em pacientes com síndrome da imunodeficiência adquirida e queixa de deglutição – análise retrospectiva de prontuários

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ABSTRACT

Purpose: To verify and characterize the function of swallowing in Acquired Immunodeficiency Syndrome (AIDS) patients with a complaint of dysphagia. **Methods:** We performed a retrospective analysis of the medical records of 17 AIDS patients treated in a school hospital between 2011 and 2012, who underwent a bedside evaluation and treatment of swallowing. The data were related to the results of the bedside evaluation that followed specific protocols, both at baseline and discharge. Patients were divided into two groups: 1) patients who completed the swallowing intervention during the admission (GCSI); and 2) patients who did not complete the swallowing intervention during the admission (GNCSI). **Results:** The groups did not differ in age and gender. For the classification of swallowing: 1) both groups had significantly better scores at discharge compared to those at baseline (GNCSI: p=0.024; GCSI: p=0.011); 2) the scores did not differ between groups at baseline (p=0.349); 3) at discharge, the scores were different between groups (p=0.002), with better results in the GCSI group. The analysis of the clinical signs and symptoms of oropharyngeal dysphagia or penetration/aspiration indicated that in both groups, there was a statistically significant difference between baseline and discharge only in the presence of multiple swallows (a decrease in the number of swallows after intervention). **Conclusion:** Swallowing ability improved after intervention. Additionally, clinical signs and symptoms suggestive of oropharyngeal dysphagia or penetration/aspiration resolved. The GCSI group showed better results than GNCSI after intervention.

Keywords: Deglutition; Deglutition disorders; Acquired Immunodeficiency Syndrome; Speech, Language and Hearing Sciences; Evaluation

RESUMO

Objetivo: Verificar e caracterizar a deglutição de pacientes internados, diagnosticados com Síndrome da Imunodeficiência Adquirida (SIDA), com queixas de deglutição. **Métodos:** Análise retrospectiva de 17 prontuários de pacientes com SIDA, atendidos em um hospital escola, entre 2011 e 2012, submetidos a protocolos de avaliação e tratamento da deglutição em beira de leito. Os dados coletados foram referentes à avaliação da deglutição em beira de leito, por meio de protocolos específicos, no momento inicial e na alta fonoaudiológica ou hospitalar. Os pacientes foram divididos em dois grupos: Grupo de alta fonoaudiológica (GAF): pacientes que receberam alta fonoaudiológica antes da alta hospitalar; Grupo de alta hospitalar (GAH): pacientes que receberam alta hospitalar sem terem recebido alta fonoaudiológica. **Resultados:** Os grupos não se diferenciaram em relação à idade e gênero. Quanto à classificação da disfagia: 1) ambos os grupos apresentaram escores significativamente melhores no momento da alta, em relação ao momento inicial (GAH - p=0,024; GAF - p=0,011); 2) os grupos não se diferenciaram no momento inicial (p=0,349); 3) no momento de alta, os grupos apresentaram diferença significativa (p=0,002), com melhores resultados para o GAF. A análise dos sinais clínicos sugestivos de disfagia e de penetração/aspiração apontou que, na comparação intragrupos (ambos os grupos), houve diferença significativa somente para a presença de deglutições múltiplas, com redução do número de deglutições após o tratamento. **Conclusão:** Os grupos obtiveram melhora na escala de classificação da disfagia e na remissão de sinais clínicos sugestivos de disfagia orofaríngea e/ou penetração/aspiração, sendo que o GAF alcançou melhores resultados.

Descritores: Deglutição; Transtornos de deglutição; Síndrome de Imunodeficiência Adquirida; Fonoaudiologia; Avaliação

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INTRODUCTION

The Human Immunodeficiency Virus (HIV) is a retrovirus—the etiologic agent of Acquired Immunodeficiency Syndrome (AIDS). The virus can be transmitted through sexual relations, transfusion of blood or blood products, sharing of syringes, and vertical transmission. The infection is characterized by three stages: acute retroviral syndrome, chronic asymptomatic infection, and symptomatic infection/AIDS, where there is a large variation in the CD4 cell count in the individual HIV carrier[1,2].

This virus acts preferentially in T-lymphocyte CD4 cells, which control the body's immune response, and act on other susceptible cells such as monocytes/macrophages. After its entry into the cell, the ribonucleic acid (RNA) virus is released. This begins the process of deoxyribonucleic acid (DNA) transcription, which afterwards migrates to the cell nucleus and integrates into the host DNA[2,3].

Laboratory diagnosis of HIV infection can be accomplished by direct methods such as culture and viral isolation, as well as detection of HIV antigen and HIV nucleic acids. Indirect methods that detect antibodies against HIV include enzyme-linked immunosorbent assay (ELISA), indirect immunofluorescence, and Western blot[2,4].

In 2003, the Brazilian Ministry of Health issued a document with definitions for AIDS cases in adults and children[5]. This document presented, in the case of adults, adaptations of the criteria for evaluation based on the scale published in 1986, by the United States Center for Disease Control and Prevention (CDC). The CDC criteria for the diagnosis of AIDS require laboratory evidence of HIV infection (two screening tests for the detection of anti-HIV antibodies, or a confirmatory reagent where immunodeficiency is diagnosed), at least one illness indicative of AIDS and/or lymphocyte CD4+ T cell count below 350 cells/mm[3], independently of the presence of other causes of immunodeficiency[5].

The diseases considered indicative of AIDS include extrapulmonary cryptococcosis; invasive cervical cancer; esophageal thrush; candidiasis of the trachea, bronchi or lungs; cytomegalovirus in any place other than the liver, spleen or lymph nodes; chronic intestinal cryptosporidiosis (more than one month); simplex mucocutaneous herpes, for more than a month; disseminated histoplasmosis (located in any organ, not just in the lung or hilar/cervical lymph nodes); chronic intestinal isosporidiose (more than one month duration); progressive multifocal leukoencephalopathy; non-Hodgkin lymphoma of B-cells (unknown immune phenotype) and other lymphomas of the following histological types: malignant lymphoma of large or small non cleaved-cells (Burkitt type or non-Burkitt) and immunoblastic malignant lymphoma without other specification (equivalent terms: immunoblastic sarcoma, large cell malignant lymphoma or immunoblastic lymphoma); primary lymphoma of the brain; pneumocystis carinii pneumonia; any disseminated microbacterial infection in organs other than the lungs, skin, or cervical/hilar lymph nodes (except tuberculosis or leprosy); reactivation of Chagas disease (meningoencephalitis and/or myocarditis); recurrent sepsis by bacteria of the genus *Salmonella* (non-typhoid); cerebral toxoplasmosis[5].

The Rio de Janeiro/Caracas criteria are based on the clinical identification of signs, symptoms, and diseases, from the accumulated experience of various health services in Rio de Janeiro. The criteria for defining cases are more simplified and do not rely on sophisticated complementary tests. By these criteria, introduced in Brazil in 1992, the individual must have two tests of reagent screening, or one confirmatory, for detection of anti-HIV antibodies and the sum total of at least ten points, according to a scale of signs, symptoms and diseases[5].

The signs, symptoms, and diseases considered and scored in the criteria include the following: anemia and/or lymphopenia and/or thrombocytopenia; asthenia; cachexia; persistent dermatitis; diarrhea; fever; lymphadenopathy; cough; oral candidiasis or hairy leukoplakia; dysfunction of the central nervous system; herpes zoster in a patient up to 60 years of age; pulmonary tuberculosis, pleural or lymph nodes located in one region; other forms of tuberculosis and Kaposi's sarcoma[5].

AIDS cases in Brazil were first identified in the early 1980s. Currently the prevalence is stable and concentrated in certain sub-groups in vulnerable populations[6,7]. According to the Epidemiological Bulletin (2013), 608,230 AIDS cases were reported from 1980 to 2011, comprising 377,662 (65.4%) male and 210,538 (34.6%) female patients[7].

Currently, the available treatment, antiretroviral therapy (ART), slows the progression of the infection up to its final stage, at which time the defining events of AIDS usually manifest[6,8,9]. The introduction of antiretroviral therapy, as it is currently known, led to the increased survival of patients seropositive for HIV. However it is also related to the advent of new and important problems[2,9]. Lipodystrophy syndrome is the redistribution of body fat with additional metabolic abnormalities, and is among the most prevalent and concerning side effects of ART[9,10]. Facial lipoatrophy consists of progressive loss of facial fat, particularly malar fat (Bichat fat) and temporal fat[2].

Among carriers of the AIDS virus, the alterations found are highlighted in the area of speech-language pathology; mouth, pharynx and esophagus infections; functional abnormalities of swallowing; structural abnormalities of the oral cavity, pharynx, and esophagus; and odynophagia[11,12], which may result in swallowing disturbances,.

In this context, the speech-language pathologist's role is to act in the rehabilitation of these patients in the hospital and during outpatient follow-up. They educate patients, promoting a safe diet, preventing pulmonary impairments, and ensuring adequate nutrition and hydration. To date, we have found few studies in the literature on the specific speech therapy approach to these individuals. The majority of the studies strive to

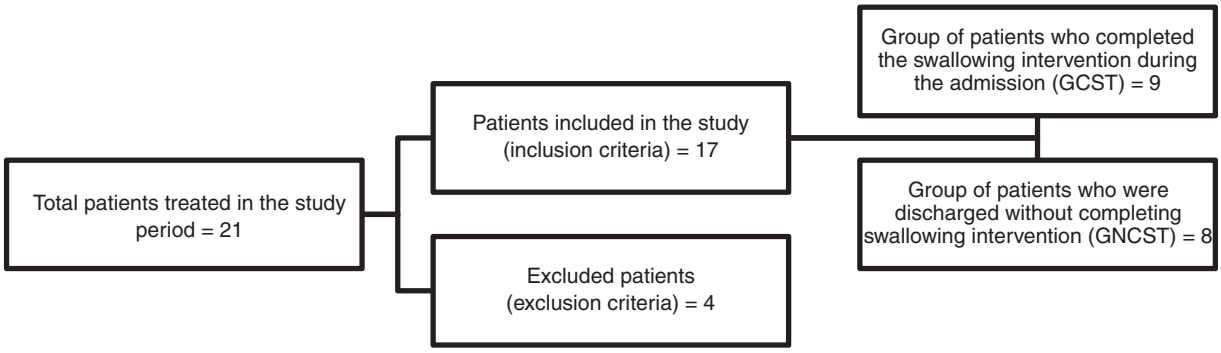

Figure 1. Path of selection and allocation of patients

present the characterization of co-morbidities, with regard to oropharyngeal dysphagia[11,12,13,14]. Others deal with esophageal dysphagia[15,16]; however, no studies were identified on the specific speech therapy treatment for this population.

The aim of this study was to verify and characterize the swallowing process of patients diagnosed with AIDS and with a complaint of dysphagia, during hospitalization in a large teaching hospital, in the State of São Paulo.

METHODS

The study was approved by the Research Ethics Committee of the *Universidade de São Paulo* (USP), (No. 0024/10). This is a retrospective study, which analyzed 17 medical records of patients with AIDS treated at the teaching hospital, in the years 2011 and 2012, which were submitted to assessment protocols and bedside swallowing treatment, by the speech-language pathologist responsible for care in the hospital inpatient units.

All speech-language pathologists responsible for bedside care are experienced, have undergone specific training in the hospital Speech Therapy Service and only start their practical activities after reaching a high degree of inter-observer agreement among their peers.

Included in this study, were patients who had, in their medical records, complete data on their inpatient swallowing therapy during hospitalization (ICU and/or ward) and excluded those whose attendance, for various reasons, was not complete (for example, unfinished assessments and reassessments or errors in the data record).

The average age of the 17 patients was 46.52 years (ranging from 26-64 years), nine were male and eight were female. As a result of the hospital discharge situation, the patients were divided into two groups: group of patients who completed the swallowing intervention during the admission (GCST), totaling nine patients in the sample; and group of patients who were discharged without completing swallowing intervention (GNCST), totaling eight patients in the sample.

The method of selection and allocation of patients is described in Figure 1.

The underlying diseases and/or reasons that led to hospitalization of patients are described in Chart 1.

Chart 1. Underlying diseases/reason that led to the hospitalization of patients included in the study

Underlying diseases/reason that led to hospitalization	Number of participants
Neurotoxoplasmosis	6
Decreased level of consciousness	3
Acute renal failure	2
Acute respiratory distress	1
Facial paralysis	1
Cryptococcal meningitis and cytomegalovirus	1
Cerebellar syndrome	1
Tuberculosis	1
Dyspnea + fever	1

The bedside evaluation included the application of the Dysphagia Risk Evaluation Protocol (DREP)[17,18,19] and the Oral Feeding Transition Protocol (OFTP)[18,19], followed by classification of the swallowing level, according to the *American Speech-Language-Hearing Association - National Outcomes Measurement System* (ASHA-NOMS Scale)[20].

The DREP was applied when the patient is found to have suspended oral feeding, with the objective of early detection of dysphagia risk. This protocol called for the supply of controlled amounts of homogeneous puree food and liquid, and required verification that the patient had the ability to receive higher volumes and different consistencies of food. The protocol had two phases of testing: a swallowing test of water and a swallowing test of pureed food, whereby items suggestive of inadequacies in the oropharyngeal swallowing process could be evaluated. This included extraoral loss, oral transit time, nasal reflux, residue in the oral cavity, number of swallows, laryngeal elevation, cervical auscultation, oxygen saturation, vocal quality, coughing, choking, and other signs. These assessed items were classified by the present/absent binomial as well as the final conclusion, and were based on the presence of clinical signs suggestive of laryngotracheal penetration/aspiration or oropharyngeal dysphagia[17,18,19].

OFTP is a protocol developed for the clinical management of dysphagia during the introductory transitional phase of the oral diet, and allowed for testing with pureed, semi-solid and solid food, along with smooth and thick liquids. This protocol

also required checking for clinical signs suggestive of oropharyngeal dysphagia and/or penetration/aspiration - reduced level of alertness, non-collaborative and/or inattentive; inability to follow commands and instructions; alteration of postural control; alteration of holding and retention of food; change in the oral preparatory phase; slowing of oral transit time; residues in the oral cavity; loss of food through the nose; odynophagia; alteration of hyolaryngeal elevation and excursion; multiple swallowing; wet voice; cough before, during or after swallowing; weak and ineffective cough; hoarseness; choking; change of cervical auscultation after swallowing; need of laryngeal cleaning on command; drop in oxygen saturation; respiratory distress; general signs of discomfort or clinical instability[18,19].

After application of the DREF and OFTP protocols, the last phase of the patient assessment process was the determination of the swallowing level classification, which is based on the ASHA – NOMS scale[20] (Chart 2). This classification was performed by the speech-language pathologist, based on the results obtained in the protocols previously applied. The ASHA – NOMS scale is a multidimensional instrument designed to measure the specific diet level of patients and the required level of supervision for their food, which should be classified by assigning scores from 1 to 7 (Chart 2) with greater severity in the lower scores and complete independence in the highest score[18-20].

The swallowing treatment consisted of the application of direct and indirect therapeutic techniques, and the management of food reintroduction[21,22,23,24,25,26,27]. The application of indirect therapeutic techniques consists of the use of exercises, muscular and/or structural manipulations and maneuvers, aimed at improving oral motor control, which are prerequisites for safe swallowing[22,23,26]. The application of direct therapeutic techniques were used in cases where it was possible to administer food orally, wherein the speech-language pathologist performed the food supply through the mouth, in a controlled and directed manner, using muscular and/or structural maneuvers and postures each patient as necessary[22,23,26].

After the completion of swallowing therapy treatment or at the time of hospital discharge, patients were reassessed, following the same procedures for evaluation. Figure 2 describes the swallowing therapy of the patients.

Chart 2. Classification levels ASHA – NOMS Scale[20]

Level 1	The individual is not able to swallow anything safely by mouth. Nutrition and hydration are carried out by non-oral resources
Level 2	The individual is not able to swallow safely by mouth, but can ingest some consistencies with maximum use of aids, only in therapy. It is necessary to alternate feeding method
Level 3	An alternative method is required if the subject ingests less than 50% of the nutrition and hydration and / or swallowing is safe with the use of aids for the utilization of compensatory maneuvers and / or maximum dietary restriction
Level 4	Swallowing is safe, but requires moderate use of aids to utilize compensatory strategies and / or have moderate restriction of diet and / or needs feeding for all or oral supplement
Level 5	Swallowing is safe with minimal restrictions of diet and / or occasional need of aids to use compensatory strategies. All nutrition and hydration are received by mouth
Level 6	The individual eats and drinks independently and may rarely require minimal aid. The patient can avoid specific food items or require additional time.
Level 7	The individual's ability to feed independently is not limited by swallowing function. Compensatory strategies are effectively used when necessary.

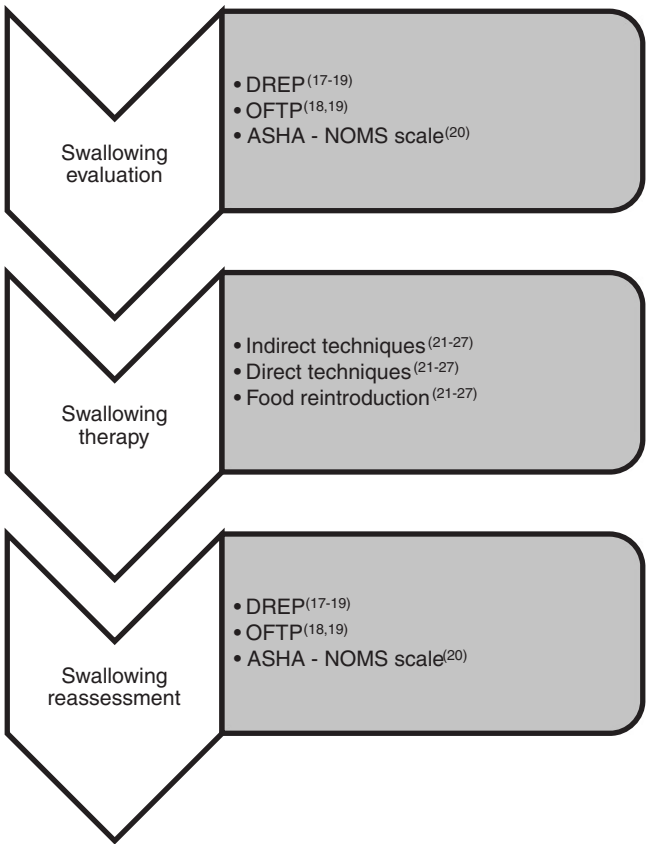

Figure 2. Monitoring Employed Speech-Language Pathology

Data analysis

The study variables - clinical signs of oropharyngeal dysphagia and/or penetration/aspiration and rating on the ASHA – NOMS scale - were compared between groups using the Wilcoxon Signed-Rank test, and the Kruskal-Wallis test, at the two times of evaluation.

RESULTS

There was no pairing in the groups, due to the nature of the study and the general characterization of the patients.

However, the analysis of the data showed that there was no statistical difference between the studied groups, in terms of age (p=0.455) and gender (p=0.727), according to data from the Kruskal-Wallis test (Table 1).

With regard to the characterization of the participants and the outcome of the swallowing therapy assessment according to ASHA – NOMS Scale, the comparison performed using the Wilcoxon Signed-Rank test showed that for the GNCST, the result from the scale was significantly better at the time of hospital discharge in relation to the point of initial evaluation (Z=-2.264; p=0.024). The same can be observed for the GCST (Z=-2.558, p=0.011). The comparison performed between the groups, using the Kruskal-Wallis test, showed that, when comparing the result from the scale at the time of initial evaluation, the groups did not differ with respect to performance (χ^2=0.876; p=0.349). However, at the end, the groups showed a statistically significant difference (χ^2=9.695; p=0.002), with better results for the group who received complete swallowing intervention (GCST) (Table 2).

Regarding the characterization of study participants in relation to clinical signs suggestive of oropharyngeal dysphagia and/or laryngotracheal penetration/aspiration, the results of the comparison (Kruskal-Wallis test) between the groups at the time of evaluation did not show significant differences in the frequency of presence of clinical signs. The comparison between the groups at the time of re-evaluation also showed no significant differences in relation to the frequency of presence of signs.

In the intra-group comparison (Wilcoxon Signed-Rank test), when comparing the data of evaluation and re-evaluation, both groups showed a statistically significant difference only for the presence of multiple swallows. We observed a reduction in the number of swallows required for the realization of the function, at the time of re-evaluation (Table 3).

DISCUSSION

In this study, we analyzed the evolution of the swallowing process of patients diagnosed with AIDS and with a complaint of dysphagia, considering the severity scale and clinical signs found in the evaluation and re-evaluation, during the admission process to a large teaching hospital in the State of São Paulo.

While there was no pairing of the analyzed groups (due to the nature of the study), no significant difference was identified in relation to the gender and age of the patients, which ensures greater credibility to the results obtained. Also, we did not observe significant differences between the groups studied, with respect to the classification of the swallowing level in speech therapy assessment. When we compared the beginning and end of the swallowing therapy, the ASHA – NOMS Scale showed that the scores obtained at the time of reassessment were significantly higher in both groups, indicating improvement in the swallowing process. However, the groups showed significant differences in the final scores, with better results for the group completing the swallowing intervention (GCST).

Table 1. Characterization of the study patients, as groups

	Did not complete swallowing intervention group (n=8)	Completed swallowing intervention group (n=9)	p-value
Age (years)			
Mean	42.25	44.33	
Standard deviation	4.25	3.75	0.455
Minimum-maximum	26-64	26-60	
Gender			
Individuals – male	3	6	0.727
Individuals - female	5	3	

Kruskal-Wallis test (p<0.05)

Table 2. Swallowing rating in the assessment and reassessment, according to ASHA – NOMS Scale

ASHA – NOMS	Group did not complete speech language intervention (n=8)				Group completed speech language intervention (n=9)			
	Evaluation		Re-evaluation		Evaluation		Re-evaluation	
	n	%	n	%	n	%	n	%
Level 1	1	13	0	0	2	22	0	0
Level 2	2	25	1	13	1	11	0	0
Level 3	3	38	0	0	1	11	0	0
Level 4	2	25	4	50	3	33	0	0
Level 5	0	0	2	25	1	11	0	0
Level 6	0	0	0	0	0	0	2	22
Level 7	0	0	1	13	1	11	7	78

Table 3. Characterization of clinical signs suggestive of oropharyngeal dysphagia and/or laryngotracheal penetration/aspiration

Clinical signs	Did not complete swallowing intervention group (n=8)		Completed swallowing intervention group (n=9)	
	Evaluation	Re-evaluation	Evaluation	Re-evaluation
	n (%)	n (%)	n (%)	n (%)
Reduce the warning level	1 (12.5)	0 (0)	1 (11.1)	0 (0)
Inability to follow commands	0 (0)	0 (0)	0 (0)	0 (0)
Alteration of postural control	0 (0)	0 (0)	0 (0)	0 (0)
Alteration of the oral preparatory phase	1 (12.5)	0 (0)	2 (22.2)	0 (0)
Previous oral leakage	2/25	0 (0)	1 (11.1)	0 (0)
Increased oral transit time	4:50	2/25	1 (11.1)	0 (0)
Residue in oral cavity	1 (12.5)	2/25	2 (22.2)	(0)
Nasal reflux	0 (0)	0 (0)	0 (0)	0 (0)
Odynophagia	0 (0)	0 (0)	0 (0)	1 (11.1)
Multiple swallows	3 (37.5)	0 (0)	5 (55.5)	0 (0)
Reduced laryngeal elevation	5 (62.5)	3	5 (55.5)	2 (22.2)
Altered cervical auscultation	3 (37.5)	0 (0)	3 (33.3)	0 (0)
Drop in O2 saturation	1 (12.5)	0 (0)	1 (11.1)	0 (0)
Wet voice	2/25	2/25	2 (22.2)	1 (11.1)
Cough	3 (37.5)	1 (12.5)	3 (33.3)	0 (0)
Choking	1 (12.5)	0 (0)	0 (0)	0 (0)
Laryngeal cleaning needs on command	1 (12.5)	1 (12.5)	0 (0)	0 (0)
Dysphonia	3 (37.5)	0 (0)	2 (22.2)	0 (0)
Respiratory distress	0 (0)	0 (0)	0 (0)	0 (0)
General signs of discomfort or clinical instability	1 (12.5)	0 (0)	0 (0)	0 (0)

According to clinical signs, compared to the performance of intra-group patients, there was a statistically significant difference for the presence of multiple swallows in both groups. Multiple swallowing indicates that, instead of swallowing the bolus in a single cohesive mass, the patient only swallowed part of it, requiring two or more attempts to complete the process. This may indicate a difficulty of propulsion of the bolus and an alteration in the swallowing reflex[17-20]. In the intergroup comparison, regarding the evaluation, there were no significant differences in the frequency of the presence of clinical signs. The same occurred in the intergroup comparison, at the time of reassessment.

Overall, the results of this study agree with the observations from the literature which indicate that AIDS patients present with structural and functional changes related to swallowing,[11,12] and principally, in the sample studied, functional abnormalities in swallowing. Contrary to what has been indicated in the literature[11,12], patients in this study sample did not report odynophagia.

Researchers have indicated that, lesions on the cortical tracts were not associated with AIDS, although isolated motor neuron diseases have previously been described[28-30]. Moreover, it appears that the latter disease may be reversible with the introduction of ART[28,30]. Based on these statements, it can be concluded that the use of ART, along with speech therapy intervention, may benefit patients by increasing the quality of life indices and reducing the morbidity and mortality of the AIDS population. These are issues identified by the literature as some of the most detrimental to patients[12].

In the evaluation, both the patients that received complete swallowing intervention, and those who did not, presented lower scores on the ASHA – NOMS Scale, mostly at levels 2, 3 and 4 in the GNCST, and levels 1 and 4 in the GCST. During re-evaluation, we observed a predominance of levels 4 and 5 for the GNCST and levels 6 and 7 for GCST, emphasizing the importance of swallowing therapy during the rehabilitation of these patients. For the group of patients who received the complete swallowing therapy treatment, the results were even more positive, proven by the significant difference between the groups in the final evaluation (p=0.002).

This study sought to raise issues relating to AIDS, both as regards to the general clinical characteristics of the patient, and those related to swallowing therapy procedures. It was possible to observe the results of swallowing therapy intervention and, through analysis of the swallowing classification and the survey of clinical signs suggestive of dysphagia, to visualize the results of the employed intervention.

The objectives of this study did not include the presentation of how the swallowing therapy was performed, but intended to contribute to other studies being carried out in this area with a

larger number of participants and rather an the explanation of the structure of the therapy employed.

CONCLUSION

The study results indicate that both groups showed improvement in the dysphagia classification scale and in the remission of clinical signs suggestive of oropharyngeal dysphagia and/or penetration/aspiration, and that who completed the swallowing intervention during the admission achieved better results.

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