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ARTIGO ORIGINAL

Identificação de broncoaspiração por disfagia orofaríngea em pacientes com pneumonia comunitária

Identification of bronchoaspiration due to oropharyngeal dysphagia in patients with community pneumonia

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RESUMO

A pneumonia é uma inflamação do parênquima pulmonar resultante do processo infeccioso ou inflamatório, responsável por 5% do total das mortes notificadas no mundo, instalando-se geralmente em indivíduos cujos mecanismos de defesa encontram-se comprometidos. A relação estreita entre as alterações da deglutição e a predisposição para pneumonias bacterianas de repetição e sua associação com desordens neuromusculares tem sido objeto constante de pesquisas. Objetivo: propor um protocolo clínico para detecção de broncoaspiração entre pacientes com pneumonia sem realização de videofluoroscopia. Metodologia: 70 pacientes com média de idade de 67,5±16,3 anos, foram submetidos a 2 protocolos de avaliação da deglutição validados na literatura: Tohara (2003) e Xerez (2002). Resultados: Foram considerados aspiradores pelo exame clínico 62,9% (44/70). Ser classificado aspirador pelo exame clínico mostrou correlação estatística significativa com a presença de doença neurológica e redução do estado de alerta (p<0,001). Conclusão: o exame clínico foi capaz de detectar os pacientes em risco para pneumonia aspirativa. A presença da associação de fatores deve levar a equipe a adotar cautela maior no manuseio da alimentação do paciente com pneumonia que pode ser de origem aspirativa.

PALAVRAS-CHAVE

pneumonia aspirativa, avaliação clínica, fonoaudiologia, deglutição, desordens neuromusculares

ABSTRACT

Pneumonia is a pulmonary parenchyma inflammation that results from an infectious or inflammatory process, responsible for 5% of all deaths reported in the world; it usually affects individuals whose defense mechanisms are compromised. The close association between swallowing abnormalities and the predisposition to repetitive bacterial pneumonia and its association with neuromuscular disorders have been the aim of many studies. Aim: To propose a clinical protocol to detect bronchoaspiration in patients with pneumonia, without videofluoroscopy. Method: 70 patients with mean age of 67.5±16.3 years were submitted to two swallowing evaluation protocols, previously validated in literature: (Tohara (2003) and Xerez (2002)).

Results: 62.9% (44/70) of the patients were considered aspirators by the clinical examination, which showed a significant statistical correlation with the presence of neurological disorders and reduction in the state of alertness (p <0.001). Conclusion: The clinical examination was able to detect the patients at risk for aspiration pneumonia. The association of risk factors should lead the healthcare team to exercise more caution when planning the diet of the patient with pneumonia, as it can be the aspiration type.

KEYWORDS

aspiration pneumonia, clinical evaluation, speech pathology, swallowing, neuromuscular disorders

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Introduction

Pneumonia is an inflammation of the pulmonary parenchyma, resulting from an infectious process. There is a close association between swallowing alterations and predisposition to repeated bacterial pneumonia. The difficulties found in the identification of aspiration in patients with neuropathies have been described in literature. To identify and diagnose pneumonia and associate it to swallowing difficulties have been a great challenge.

In 1997, Smithard et al. described a reduction in the incidence of pneumonia of 51% on the first day to 17% within a month, to 11% in six months, when the patient was followed by a multidisciplinary team that monitored feeding[1].

Daniels and cols. described the clinical predictors of aspiration at videofluoroscopy (VFC): dysphonia (sensitivity 76%, specificity 68%), dysarthria (sensitivity 76%, specificity 53%), gag reflex (sensitivity 62%, specificity 82%), abnormal voluntary cough (sensitivity 48%, specificity 94%) , cough during swallowing (sensitivity 57%, specificity 85%), vocal change during swallowing (sensitivity 38%, specificity 85%), abnormal voluntary cough (sensitivity 70%, specificity 84%). The bedside clinical evaluation of swallowing failed to identify 24% of the aspirators[2].

In 2001, a group from the University of Tennessee proposed an assessment of the specificity and sensitivity of the bedside evaluation for the diagnosis of aspiration pneumonia and compared this protocol with that by videofluoroscopy (the gold standard for swallowing evaluation) in 60 cases of acute-phase stroke, reaffirming the need for studies that seek to identify the predictive factors of aspiration. The results of this study reinforced the difficulty to classify the patient as aspirator, showed that the silent aspiration frequently goes undiagnosed and that some patients who are non-aspirators end up being classified as aspirators[3].

In our Service, a study trying to correlate the swallowing alterations identified at the clinical examination with those observed at the VFC in patients with stroke sequelae, showed that there is a strong correlation between the oral phase alterations identified by the clinical examination and the risk of aspiration confirmed by the VFC[4].

Tohara proposed 3 tests to predict aspiration without VFC: ask the patient to maintain 3 ml of water on the tongue and wait for the order to swallow; put 4g of pureed fruit or vegetable on the dorsum of the tongue and wait for the order to swallow. The third test consists of a static X-ray of the pharynx before and after swallowing with barium contrast. The author validated the tests by VFC and found a sensitivity of 90% when predicting aspiration[5].

Objectives

It is evident in the international literature the need for an evaluation protocol that can classify without VFC, in wards, the patients who are predisposed to aspiration, in order to offer assistance and treatment to this individual, reducing the incidence of pneumonia[6]. Therefore, the main objective of this study was to propose a clinical protocol for the detection of aspiration risk without VFC.

Material and Methods

The research was carried out in the wards of the Medical Clinic of Hospital Universitário Clementino Fraga Filho from January 2004 to January 2005. Seventy patients whose mean age was 67.5% yrs were evaluated. All patients were inpatients, admitted at the hospital with a diagnosis of pneumonia. The excluding factors were: patients in coma, patients with an unstable clinical picture at the moment of the evaluation, and psychomotor agitation states that would prevent access to the patient. The remaining inpatients who did not fit this profile, and who had a diagnosis of pneumonia, were evaluated.

The patients were submitted to a clinical evaluation protocol based on 2 authors: Tohara[5] and Xerez[4], who were validated by VFC. As shown in the Tables below:

Table 1
Clinical Examination Parameters.

Evaluation	Parameter	Class
Motor and Oral-Sensorial Examination	a . gag reflex	Altered/normal
	b . palate mobility	Altered/normal
	c. labial strength	Altered/normal
	d. absence of teeth	Altered/normal
	e. tongue mobility	Altered/normal
	f. labial strength	Altered/normal
Consistencytesting	No liquids	Saliva swallowing
	Puree consistency	Mashed banana
	Thickened liquid	Diet yogurt
	Thin liquid	Ice-cold water with drops of lemon juice

In this protocol the following evaluation criteria were considered: tongue, soft palate and lip mobility, as well as dental state, gag reflex, saliva and thin liquid swallowing (50 mL of ice-cold water with drops of lemon juice), aiming at attaining a higher proprioception of intra-oral liquid, according to Santini[7].

At the end of the saliva and thin liquid testing, the patients were classified with a score that varied from 0-5, according to the severity scale proposed by Tohara[5].

Table 2
Parameters of Classification of Consistency Evaluation[5]

Evaluation	Classification	Parameter
Consistency	Level 1	Severe or moderate aspiration,Absence of coughing, retention in the oral cavity after swallowing.
	Level 2	Minimal aspiration with no coughing response.
	Level 3	Signs of laryngeal penetration, but no aspiration.
	Level 4	Oral and pharyngeal retention with no signs of penetration and aspiration
	Level 5	No evidence of penetration or aspiration.

The criteria for the classification of this group such as the risk of food, saliva and liquid penetration at the level of the vocal folds were: presence of postswallowing dysphonia, altered palate mobility and gag reflex. All the evaluation criteria described have been previously validated by VFC in literature.

Results

Seventy patients with a diagnosis of pneumonia, with mean age of 67.5 ± 16.3 yrs were assessed. Of these, 27 (38.6%) were males and 43 (61.4%) were females.

Table 3
Clinical profile of the sample studied.

Predisposing conditions	Absent	Present	P
Missing teeth	17 (24.3%)	53 (75.7%)	0.545
Reduction of alertness state	54 (77.1%)	16 (22.9%)	0.014
Neurological disease	36 (51.4%)	34 (48.6%)	0.001
Clinical Parameters	Normal	Altered	P
Mastication	5	65 (92.9%)	0.250
Labial strength	31	37 (55.7%)	0.632
Palate mobility	38	32 (45.7%)	0.389
Gag reflex	39	31 (44.3%)	0.335
Consistency testing			
No liquids	26	44	0.108
Liquids	27	43	0.056
Wet voice	48	22	0.002

Of the evaluated group, 16 individuals (22.9%) presented decreased state of alertness during the evaluation, 34 (48.6%) presented neuropathies and 53 (75.7%) presented missing teeth. The alterations found at the clinical examination of the assessed group were: 65 (92.9%) presented alteration for the mastication parameter, 39 (55.7%) for labial strength, 37 (52.9%) for labial tonus, 32 (45.7%) for palate mobility and 31 (44.3%) for the gag reflex.

Regarding the results, we can observe that 44 (62.9%) were considered as presenting swallowing alteration (saliva), 43 (61.4%) presented alteration for liquid swallowing and 48 (68.6%) presented post-swallowing wet voice.

The results above show that 48 individuals (68.6%) were considered aspirators at the clinical examination and 44 (62.9%) were considered aspirators at the consistency testing.

Table 4
Total of Aspirators Assessed by Clinical Examination.

Clinical Examination	Frequency	%
Aspirators	48	68,6
Non-aspirators	22	31,4
Total	70	100,0
Consistency testing	Frequency	%
Aspirators	44	62,9
Non-aspirators	26	37,1
Total	70	100,0

Discussion

Although the videofluoroscopy is considered the gold-standard for the diagnosis of bronchoaspiration, the procedure is not feasible for a large part of the population at risk due to the lack of postural and cognitive conditions. Therefore, the search for predictive clinical factors for aspiration risk has been a frequent issue in the Hospital Speech Therapy area worldwide.

At the proposed clinical evaluation, all patients included in the sample were continually assessed, with the exclusion of those who did not allow or complete the investigation due to clinical issues related to the pathology.

The gender variable did not present a statistical correlation with being considered an aspirator in this sample, which is in agreement with Smithard1 and Hiss[11].

Although we did not find statistical correlations between age and the condition of being an aspirator, we observed that many physiological changes were present and separately contributing to induce these individuals to complications caused by swallowing alterations.

The results of the clinical assessment showed a significant correlation with the post-swallowing dysphonia variable of the consistency testing, identifying the group as aspirator as reported by Perry8. Additionally, Ding, 2000, also contributed to this assertion, concluding that the group that developed pneumonia presented reduced laryngeal elevation and delayed glottal adduction as well as post-swallowing vocal changes. Patients with a reduced state of alertness, 22% of the sample in the present study, did not respond to this maneuver, as it is necessary for the patient to emit a prolonged /a/ vowel sound after swallowing in order to measure it[12].

According to Mann[13] the missing teeth parameter is a predictive factor of aspiration in individuals with physiological changes of swallowing that are older than 70 yrs. The present sample had a mean age of 67.5 ± 16.3 yrs, and 75.7% of the patients presented the missing teeth variable; however, significant statistical correlations were not allowed, due to the fact that it was a homogeneous group[13].

The aging process causes an important reduction in the tongue papillae, which, together with the loss of the sense of smell, result in an impairment of sensory information. It is believed that these data, associated with cognitive and state of alertness alterations, interfered in the response obtained for the oral sensitivity parameter in our sample[14].

At the analysis of the variables from the clinical evaluation, gag reflex (p=0.0335) and velar movement (p=0.389), no significant statistical correlation was observed with the condition of being an

aspirator, similarly to Tohara[5]. On the other hand, Daniels described the abnormal gag reflex as a clinical predictor of aspiration at the VFC with a sensitivity of 62% and specificity of 82%[2].

Xerez4 found a significant statistical correlation between the oral phase alterations, especially the face mobility parameter, with the pharyngeal phase, similarly to what was observed in the present study, which showed a statistical correlation between the overall clinical examination and the presence of post-swallowing dysphonia (laryngeal symptom of penetration) through the consistency testing. The present study confirmed that the clinical parameters alone do not show a significant statistical correlation with the post-swallowing dysphonia parameter.

We observed that 52.9% of the individuals from the sample studied presented labial strength alterations which results in the disorganization of the bolus ejection caused by a deficit in the intra-oral pressure, a result that is similar to that found by Dziemas, who considers facial paralysis an independent risk factor for developing pneumonia[15].

According to Costa[16], all oral phase impairment that generates alterations in the intra-oral pressure mechanism can compromise the pharyngeal phase, a fact that was fully observed in our study.

During the consistency testing, we observed that 44 (62.9%) of the assessed individuals presented difficulty in swallowing saliva; decreased salivation was observed in these cases. Decreased salivation is an aging-related fact and can contribute to the increase of muscular effort and prolonged swallowing time[14].

No significant statistical correlation was observed with the thin liquid, thickened liquid and purée consistency testing, similar to Hiss[11], who did not observe a significant difference when increasing food viscosity, for the assessed aspirator group.

Briani found a correlation between patients considered to be aspirators at the clinical assessment and the presence of neurological disease[9]. According to Macedo[17], the presence of paresis, paralysis and pharyngeal rigidity reduce airway protection and are common in neurogenic dysphagia. Although the present study is focused on patients with pneumonia and not neurological disease, this correlation was also observed due to the high incidence of neurological disease (48.6%) among patients with pneumopathy.

We found a significant correlation between the fact of being an aspirator and presenting the variable reduction in the state of alertness, as described by McCullough[3] and Smithard1. This fact identifies the presence of the variable alteration of the state of alertness as a strong predictor for the risk of aspiration, and thus it must be considered during the assessment of the safety conditions for feeding in-patients.

Data obtained from the clinical examination such as alteration of the oral motricity, especially of lips and face, associated to cognitive alterations and missing teeth suggest the existence of the risk of aspiration in the studied population, as also observed by Teramoto[10].

Conclusion

The association of risk factors should lead the healthcare team to exercise more caution when planning the diet of the patient with pneumonia, as it can be the aspiration type.

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