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Signs, symptoms and vocal function in individuals with dysphagia treated for head and neck cancer

Sinais, sintomas e função vocal em indivíduos com disfagia tratados de câncer de cabeça e pescoço

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ABSTRACT

Purpose: To evaluate the presence of vocal signs and symptoms and the vocal function in patients with dysphagia treated for head and neck cancer – HNC and identify the cutoff values of these instruments. **Methods:** Prospective study with 96 individuals (68 men and 28 women) divided into an experimental group – EG (HNC patients with dysphagia, independently of their vocal complaints) and control group – CG (without self-reported vocal or swallowing complaints, with age and sex-matched to the EG). They all answered a questionnaire with identification and characterization of the sample data, the Vocal Signs and Symptoms List – SSL and the protocols: Glottal Function Index – GFI and Voice Symptom Scale – VoiSS. The protocols cutoff values were identified by the ROC curve. **Results:** Individuals from the EG had more vocal signs and symptoms and higher scores in the GFI and the VoiSS than individuals from the CG, they also had worst vocal self-assessment. The three instruments showed maximum area under the ROC curve, with cutoff values of VoiSS=17, GFI=4 and SSL=6. **Conclusions:** Individuals treated for HNC with dysphagia presented more vocal signs and symptoms, poorer perception of their vocal dysfunction and greater loss in vocal aspects of impairment, emotional and physical than the vocally healthy individuals. The three instruments showed maximum sensitivity and specificity and can be used as screening tools.

Keywords: Dysphonia; Deglutition disorders; Head and neck neoplasms; Fluoroscopy; Surveys and questionnaires; Speech, language and hearing sciences

RESUMO

Objetivos: Avaliar a presença de sinais e sintomas vocais e função vocal em indivíduos com disfagia, tratados de câncer de cabeça e pescoço – CCP e identificar os valores de corte dos respectivos instrumentos. **Métodos:** Estudo prospectivo com 96 indivíduos (68 homens e 28 mulheres), divididos em grupo experimental – GE (pacientes tratados de CCP com disfagia, independente de queixa vocal) e grupo controle – GC (sem queixas autorrelatadas de voz e deglutição, pareados em média de idade e sexo com GE), que responderam a um questionário com dados de identificação e caracterização da amostra, Lista de Sinais e Sintomas Vocais – LSS, e dois protocolos de avaliação vocal (Índice de Função Glótica – IFG e Escala de Sintomas Vocais – ESV). Por fim, as notas de corte dos protocolos foram identificadas por meio da curva ROC (*Receiver Operating Characteristic*). **Resultados:** Indivíduos do GE apresentaram mais sinais e sintomas vocais e maiores escores no IFG e ESV que os indivíduos do GC, além de pior autoavaliação vocal. Os três instrumentos apresentaram máxima área sob a curva ROC, com valores de corte ESV=17, IFG=4 e LSS=6 pontos. **Conclusão:** Indivíduos tratados de CCP com disfagia apresentam mais sinais e sintomas vocais, pior autopercepção da disfunção vocal e maior prejuízo nos aspectos de limitação, emocional e físico da voz, que indivíduos vocalmente saudáveis. Os três instrumentos evidenciaram sensibilidade e especificidade máximas, podendo ser utilizados como ferramentas de triagem.

Palavras-chave: Disfonia; Transtornos de deglutição; Neoplasias de cabeça e pescoço, Fluoroscopia, inquéritos e questionários; Fonoaudiologia

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INTRODUCTION

Voice and swallowing have a very close relation due to the fact that they share several anatomical and neural structures for their distinct processes, such as the cranial pairs V, VII, IX, X, XI and XII, which act directly on the functions of speech and swallowing[1], and when affected, can interfere in the patient's quality of life, mainly affecting the social, nutritional and pulmonary aspects[2]. It may be relatively common for patients with voice complaints to have aerodigestive symptoms and patients with swallowing complaints present vocal symptoms, being the focus of voice therapy and swallowing, with different approaches and therapeutic evolutions[3,4] and different degrees of perception by the subjects.

The patient's impression of their health, as a focus of analysis, has been studied for some time, aiming at quality of life, which can be affected in countless ways according to physical health, psychological state, level of independence, social relations and personal beliefs of the individual, in addition to the relevant characteristics of their environment[5]. In the evaluation of quality of life, it is imperative that the perception of the subject is the focus of the instrument of analysis. Accordingly, the main tools to verify the consequences of a health problem are self-assessment questionnaires, which quantify the individual's perception of the impact of a change in their social, professional and financial relationships[5].

Assessing the quality of life related to phonation and swallowing demonstrates the real impact of changes in the lives of individuals and is important for understanding how the patient handles difficulties, as well as providing information that can be used to better target the treatment, focusing on aspects considered relevant for each patient in therapy[3].

Traditional methods and assessment objectives do not precisely measure the levels of disadvantage and inability of each patient. Questionnaires assessing quality of life and levels of disadvantage provide clinicians with information about the level of intensity of the change and an overview of how the therapeutic intervention was performed in the patient's view[3].

Some studies on swallowing and dysphagia have monitored cough or changes in phonation as a form of outcome, correlating vocal findings with clinical and objective information that indicates or suggests dysphagia[6,7]. Swallowing videofluoroscopy is generally considered a standard method of evaluation and diagnosis of dysphagia, by directly visualizing the larynx and aerodigestive tract before, during and after swallowing[8].

Penetration and aspiration can cause several vocal quality changes[9]. Evaluating the voice of the dysphagic individual can bring enriching data, especially in the case of screening, since it is a quick, simple and non-invasive method of evaluation that can be performed with the contribution of computerized acoustic analysis[10].

Over the last decade, studies have highlighted the importance of analyzing vocal symptoms in conjunction with other dysphonia and dysphagia impact data on head and neck cancer, and associating voice information with aerodigestive symptoms in a single instrument offers an advantage over self-assessment protocols that do not investigate such symptoms[11-13]. As a consequence, in screening dysphonic or dysphagic individuals, or even to compose a complete multidimensional evaluation, it may be interesting to look at the individual from a perspective of the self-evaluation of vocal symptoms and competent glottal function for voice and swallowing complaints.

The aim of this study was to evaluate the presence of vocal signs and symptoms and vocal function in individuals with dysphagia treated with head and neck cancer and to identify the efficiency characteristics and cutoff values of the protocols that separate individuals with vocal complaints from the vocally healthy.

METHODS

This study was approved by the Research Ethics Committee of *Fundação Antonio Prudente* - A.C. Camargo Cancer Center, on 6/18/2013 under the numbers 1790/13 and 334.746 (CAAE: 17199613.3.0000.5432). All the subjects involved signed a Free and Informed Consent form, thus agreeing with the realization and dissemination of this study and its results, according to Resolution 466/12 (BRAZIL.Resolution MS/CNS No. 466/12 of December 12, 2012).

Participants of this prospective study were 96 individuals, 68 men and 28 women, aged 28-87 years (mean of 58.82 years), who were divided into two groups: experimental group - EG and control group - CG. The EG was composed of patients treated for head and neck cancer (HNC), with swallowing complaints and diagnosis of dysphagia by swallowing videofluoroscopy, which is the entry point of the individuals of this group in the study (stasis in the oral cavity, oropharynx and/or hypopharynx; penetration and/or aspiration; oropharynge dysphagia indicated by the dysphagia severity scale[14], regardless of sex, age, vocal complaint, type of treatment or site of the primary lesion in head and neck cancer). The CG was composed in a paired fashion to EG with mean age and sex distribution, being vocally healthy individuals with no complaints and/or changes in swallowing and/or voice, or a history of head and neck cancer.

The EG was composed of 48 individuals, 34 men (mean age 60.55 years) and 14 women (mean age 55.07 years). The CG was composed of 48 paired individuals by mean age and sex to the EG, with no self-reported swallowing and/or voice complaints, being 34 males (mean age 60.29 years) and 14 females (mean age 54.92 years). There were no differences in sex distribution ($p > 0.99$, using the chi-square test) and mean age ($p = 0.44$, using the non-parametric Mann-Whitney U test) in the EG and GC groups.

Regarding demographic information, EG and CG differed only in the smoking requisite ($p = 0.027$, by means of the chi-square test) and alcohol use ($p < 0.001$, using the chi-square test), with higher occurrences of non-users in CG and former users in EG.

The demographic distribution of medical information and swallowing and vocal complaints of the EG group is described in Table 1.

Patients eligible for EG answered a questionnaire with identification and characterization data of the sample, Vocal Signs and Symptoms List (SSL) and two protocols of vocal self-evaluation (Voice Symptom Scale (VoiSS) and Glottic Function Index (GFI). The questionnaire for identifying and characterizing the sample was composed of name, date of evaluation, date of birth, age, sex, professional activity, smoking information, alcohol use, current medications and health problems, type and location of the tumor, treatments performed (radiotherapy, chemotherapy and/or surgery), feeding pathway (oral, nasoenteral tube (NET), nasogastric tube (NGT) or gastrostomy), presence of tracheostomy, presence and categorization of swallowing complaints, swallowing videofluoroscopy result (presence of stasis in the oral cavity,

Table 1. Demographic distribution of medical information, swallowing complaints and vocal complaints of the experimental group (N = 48)

Characteristic	Category	N (%)
Tumor type	Squamous cell carcinoma	39 (82)
	Papillary carcinoma	4 (8)
	Axial microcyst carcinoma	1 (2)
	Undifferentiated carcinoma	2 (4)
	Adenoid cystic carcinoma	1 (2)
	Osteosarcoma	1 (2)
Tumor site	Oral Cavity	14 (29)
	Oropharynge	17 (35)
	Hypopharynx	1 (2)
	Larynge	10 (22)
	Thyroid	4 (8)
	Others	2 (4)
Treatment: Radiotherapy	No	15 (31)
	Yes	33 (69)
Treatment: Chemotherapy	No	29 (60)
	Yes	19 (40)
Treatment: Surgical	No	9 (19)
	Yes	39 (81)
Enteral feeding	No	23 (48)
	Gastrostomy	10 (21)
	Nasoenteral tube	15 (31)
Traqueostomy	No	37 (77)
	Yes	11 (23)
Swallowing complaints	No	0 (0)
	Yes	48 (100)
Categorization of swallowing complaints	Choking	18 (38)
	Swallowing difficulties	13 (27)
	Sensation of food stoppage	6 (12)
	Throat clearing/cough	2 (4)
	Physician/SLP audiologist request	9 (19)
Vocal complaint	No	0 (0)
	Yes	48 (100)
Categorization of vocal complaints	Thick voice	3 (6)
	Acute voice	2 (4)
	Loss of voice	1 (2)
	Hoarseness	7 (15)
	Different voice	21 (44)
	Hyper-nasal voice	9 (19)
	Weak/low voice	5 (10)

Subtitle: N = number of subjects

oropharynx and/or hypopharynx, penetration, aspiration, type and level of dysphagia), presence and categorization of vocal complaints and vocal self-assessment (excellent, very good, good, reasonable or poor).

Vocal Signs and Symptoms List (SSL)[15], translated and culturally adapted to Brazilian Portuguese as *Lista de Sinais e Sintomas Vocais (LSS)*[16] is a simple and direct questionnaire, with 14 signs and symptoms related to voice and aerodigestive treatment. The answer key is only "yes" or "no" for each item, resulting in a total number of self-reported vocal signs and symptoms, from zero (0) to 14.

The Glottal Function Index (GFI)[17], translated and culturally adapted to Brazilian Portuguese as the Índice de Função Glótica (IFG)[18] is a four-item protocol, easily manageable and designed to assess the presence and degree of vocal dysfunction in adults. The GFI has an answer key (from "not a problem" = zero (0) points to "it is a very large problem" = 5 points) and a single total score, calculated by the sum of the answers of the four questions in the protocol. The higher the GFI score, the greater the patient's perception of their vocal dysfunction.

The Voice Symptom Scale - VoiSS[11], translated and culturally adapted[19] and validated for Brazilian Portuguese as the *Escala de Sintomas Vocais (ESV)*[20] is a protocol of 30 questions, divided into three subscales: 15 questions in the domain *Impairment*, eight in *Emotional* and seven in *Physical*. The answer key is composed of five items: never = zero (0) points, rarely = 1 point, sometimes = 2 points, almost always = 3 points and always = 4 points. The VoiSS provides four scores, from the gross sum of the value indicated in each question, from three partial domains: *Impairment* (sum of the results of questions 1, 2, 4, 5, 6, 8, 9, 14, 16, 17, 20, 23, 24, 25 and 27, with value from zero (0) to 60 points); *Emotional* (sum of the results of questions 10, 13, 15, 18, 21, 28, 29 and 30, with a value of zero (0) to 32 points); *Physical* (sum of answers of questions 3, 7, 11, 12, 19, 22 and 26, with a value from zero (0) to 28 points) and a total score (from zero (0) to 120 points (sum of the three

partial domain scores). The higher the VoiSS scores, the greater the patient's perception of their vocal deviation.

CG individuals answered the same questionnaires and protocols, with the exception of medical information and videofluoroscopy examination of swallowing, not present in this group.

Finally, the cutoff value that separated the post-treatment dysphonic individuals from head and neck cancer of the vocally healthy was determined based on the sensitivity and specificity indicators, both used in screening programs or protocols, through the receiver operating characteristic (ROC) curve. The ROC curve represents the relationship between the sensitivity and specificity of a test, being a simple analytical procedure to determine the true value of the cutoff point of an instrument[21].

In the statistical analysis, the Mann-Whitney *U* test was used to compare the questionnaire scores and the age values of EG and CG. The chi-square test was used to compare the distributions of clinical/sociodemographic characteristics between groups. The ROC curve was used to determine the cutoff values that best discriminated the patients (EG x CG) in each questionnaire. To define the cutoff values, the highest values of sensitivity and specificity were considered simultaneously. The significance level adopted was 5% and *the software Livre R*, version 3.0.1 was used in the analyzes.

RESULTS

In SSL, there was a higher mean number of vocal signs and symptoms for EG, when compared to CG (mean of 1 sign and vocal symptom for CG and 9 for EG, p <0.001). In GFI, the EG presented higher mean scores (20 points) when compared to CG (0 point), evidencing a higher self-perception of vocal dysfunction. In VoiSS, EG presented higher partial and total scores (Impairment = 23, Emotional = 5, Physical = 10 and Total = 39) than the CG (Impairment = 3, Emotional = 0, Physical = 2 and Total = 5), with p <0.001, showing that individuals treated for head and neck cancer and dysphagia, even if the main complaint is swallowing, refer to some degree to impairment in their voices, as shown in Table 2.

Regarding vocal self-assessment, the patients of the EG presented worse self-reports, classifying their voices only among the "bad", "reasonable" and "good" options when compared to the CG subjects, who classified their voices from "excellent", "very good" and "good", as shown in Table 3.

There were positive correlations between the total scores of GFI and VoiSS protocols with SSL. Therefore, the more signs and symptoms the patient reported, the worse their perception of vocal dysfunction and the greater the self-reported impairments in the emotional, physical, and physical aspects of voice, although the correlations were not strong. There were no age correlations with any of the vocal self-assessment instruments, as shown in Figure 1.

Patients with primary oropharyngeal lesions were the ones with the most vocal signs and symptoms (mean 9.5), followed by patients with laryngeal lesions (mean 8.4) and oral cavity (mean 7.8), with value of p = 0.05. The results of swallowing videofluoroscopy of the EG individuals are shown in Table 4.

Patients who had aspiration during the swallowing videofluoroscopy examination had, on average, worse values (mean 7.0) of the VoiSS Emotional score, when compared to patients who did not aspirate (mean 3.0), with a value of p = 0.04.

Table 2. Comparison of voice self-assessment protocols and questionnaire scores in the experimental group and in the control group

Protocols	Group	N	Mean	Standard deviation	Min-Max	Median	p value
SSL	CG	48	1	1	0-2	0.5	<0.001*
	EG	48	9	2	6-12	8	
GFI	CG	48	0	1	0-2	0	<0.001*
	EG	48	10	4	4-20	9	
VoiSS - Impairment	CG	48	3	2	0-9	2	<0.001*
	EG	48	23	12	0-54	22.5	
VoiSS - Emotional	CG	48	0	0	0-2	0	<0.001*
	EG	48	5	6	0-26	4	
VoiSS - Physical	CG	48	2	2	0-8	2	<0.001*
	EG	48	10	4	0-20	10	
VoiSS - Total	CG	48	5	3	0-10	5	<0.001*
	EG	48	39	17	17-89	35	

*Significant values (p≤0.05) – nonparametric Mann-Whitney U test
Subtitle: EG = Experimental Group; CG = Control Group; SSL = Vocal Signs and Symptoms List; GFI = Glottic Function Index; VoiSS = Voice Symptom Scale; N = Number of subjects

Table 3. Vocal self-assessment of the experimental group (N = 48) and the control group (N = 48)

Vocal self-assessment	CG	EG	Total	p value
	N (%)	N (%)		
Excellent	9 (19)	0 (0)	9	<0.001*
Very good	28 (58)	0 (0)	28	
Good	11 (23)	8 (17)	19	
Fair	0 (0)	28 (58)	28	
Poor	0 (0)	12 (25)	12	

*Significant values (p≤0.05) – chi-square test
Subtitle: EG = Experimental Group; GC = Control Group; N = Number of subjects

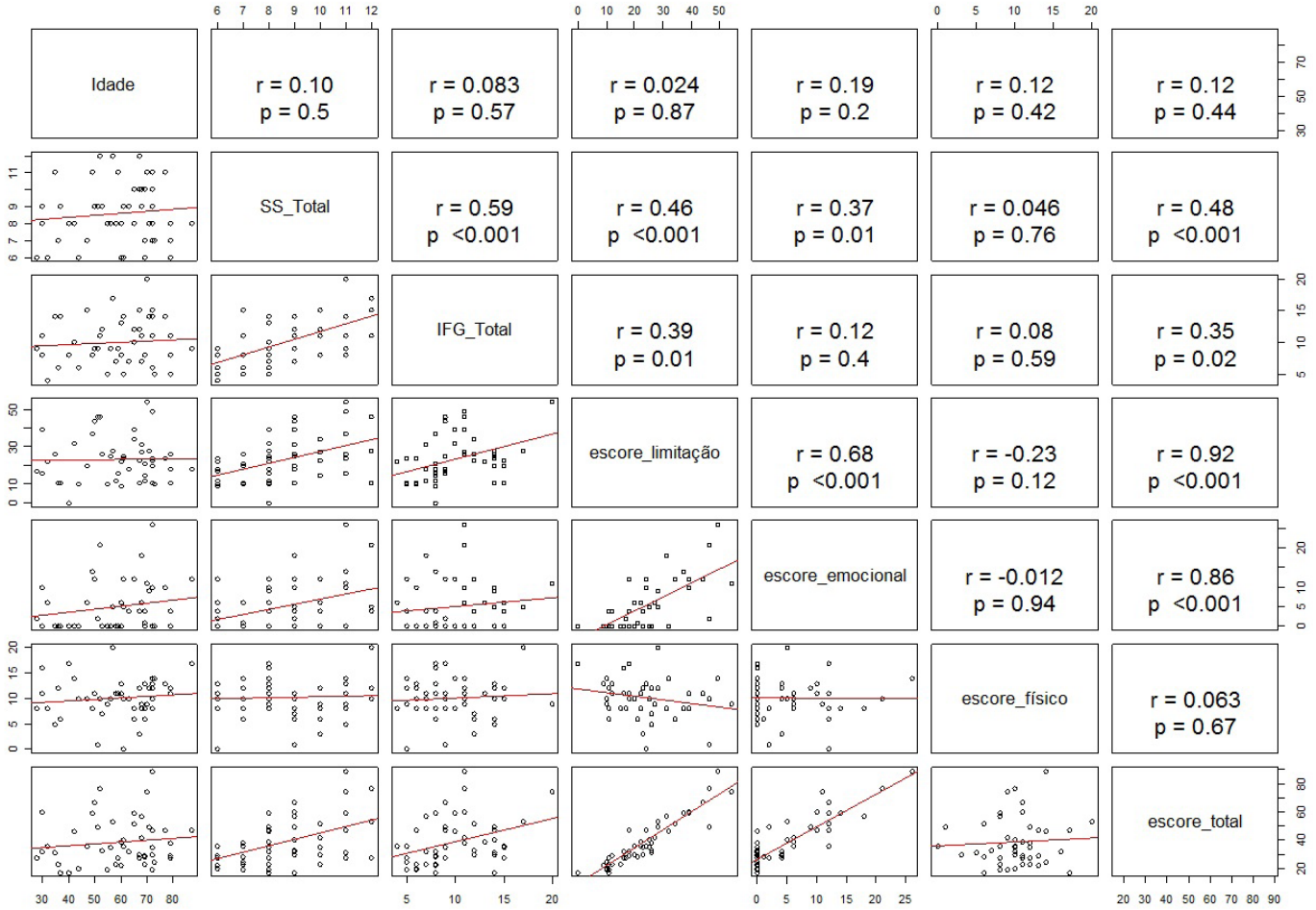

Figure 1. Correlation matrix of mean age, total score of the Vocal Signs and Symptoms List, total score of the Glottic Function Index and Voice Symptom Scale scores (Impairment, Emotional, Physical and Total) by the Pearson correlation test

Subtitle: *idade* = age; SS = Brazilian version of the Vocal Signs and Symptoms List; IFG = Brazilian version of the Glottic Function Index; *escore_limitação* = impairment score of the validated version of VoiSS into Brazilian Portuguese; *escore_emocional* = emotional score of the validated version of VoiSS into Brazilian Portuguese; *escore_físico* = physical score of the validated version of VoiSS into Brazilian Portuguese; *escore_total* = total score of the validated version of VoiSS into Brazilian Portuguese

Table 4. Demographic distribution of data from swallowing videofluoroscopy of the experimental group (N = 48)

Characteristic	Category	N (%)
Stasis: oral cavity	No	24 (50)
	Yes	24 (50)
Stasis: oropharynge	No	4 (8)
	Yes	44 (92)
Stasis: hypopharynx	No	14 (29)
	Yes	34 (71)
Penetration	No	10 (21)
	Yes	38 (79)
Aspiration	No	22 (46)
	Yes	26 (54)
Videofluoroscopy result	Functional swallowing	0 (0)
	Oropharynge dysphagia	48 (100)
Level of dysphagia	Normal swallowing	0 (0)
	Mild dysphagia	10 (21)
	Mild/moderate dysphagia	17 (35)
	Moderate dysphagia	9 (19)
	Moderate/severe dysphagia	5 (10)
	Severe dysphagia	7 (15)

Subtitle: N = number of subjects

Of the patients who presented stasis in the oropharynx, during the swallowing videofluoroscopy examination (N = 34), the majority (N = 31, 78%) assessed their voice as "reasonable" or "poor", with p = 0.0231. There were no significant differences or correlations between the other items of the questionnaire of identification and characterization of the sample and videofluoroscopy data of swallowing with the instruments of vocal self-evaluation used.

In order to identify the cutoff values of SSL and the total scores of the GFI and VoiSS protocols, which separate the dysphonic individuals with organic dysphonia from head and neck cancers of the vocally healthy, the highest values of sensitivity and specificity were considered, as shown in Table 5.

The values of area under the curve, as well as the values of sensitivity and specificity, were equal to 1, for the three questionnaires. Using cutoff values of 17 points for VoiSS, 4 points for GFI and 6 points for SSL, 100% of head and neck cancer patients were correctly classified for vocal changes related to vocal signs and symptoms and glottic function in this specific type of organic dysphonia (Figure 2).

DISCUSSION

Individuals treated for head and neck cancer commonly have organic dysphonia of varying degrees and impacts on quality of life, especially when tumors are laryngeal[12,13,22,23]. Organic dysphonias may generate greater perception of vocal symptoms related to vocal impairment when compared to other types of dysphonias, such as organ functional and functional[24]. It is well known that patients with vocal alterations frequently present worse scores in the protocols of vocal self-assessment[17,20],an expected result in laryngeal tumors, not always investigated in cases of tumors of head and neck, except larynx. Additionally, subtle changes in vocal quality, or even the well-known wet voice[6,7,10], may appear as early signs that indicate some altered laryngeal function, which in the conditions of these patients, may or may not present with dysphagia.

The experimental population of this study did not present, as the main complaint, vocal alteration; the participation in the study was due to the complaint of swallowing, or diagnosis of dysphagia in the clinical evaluation, with an indication of swallowing videofluoroscopy examination which, in all cases of the EG sample, demonstrated at least a discreet degree of dysphagia. Dysphagia is usually presented during and/or after the treatment of head and neck cancer, whether due to anatomical mutilation, surgery or radiation or systemic side effects of chemotherapy, and may temporarily or permanently impact these individuals[25-27]. However, throughout the collection it was observed that the patients had vocal complaints after the treatment of head and neck cancer, regardless of whether they were laryngeal or thyroid tumors, in which there is a proven vocal alteration associated with the treatment, whether surgery, chemotherapy and/or radiotherapy, the latter causing histological changes in the composition of the vocal folds, such as fibrosis and reduction of muscle mass[12,13,22,23,28]. Thus, analyzing vocal data of the dysphagic patient can bring important and aggregating contributions to the speech-language pathology

Table 5. Sensitivity, specificity and accuracy of the ROC curve for the cutoff values of the Vocal Signs and Symptoms List and total protocol scores Glottic Function Index and Voice Symptom Scale

	Values Cutoff	Sensitivity (%)	Specificity (%)	Accuracy (%)
SSL	>12	0	100	50
	.....	.....	.....	.....
	7	85	100	93
	6*	**100**	**100**	**100**
	2	100	83	92
	1	100	50	75
	0	100	0	50
GFI Total score	>20	0	100	50
	20	2	100	51
	.....	.....	.....	.....
	5	98	100	99
	4*	**100**	**100**	**100**
	2	100	85	93
	1	100	73	86
	0	100	0	50
VoiSS Total score	>89	0	100	50
	.....	.....	.....	.....
	19	96	100	98
	17*	**100**	**100**	**100**
	10	100	94	97
	.....	.....	.....	.....
	2	100	13	56
	1	100	4	52
	0	100	0	50

Analysis by ROC curve; Highlights: efficiency and cutoff values of each instrument

Subtitle: SSL = Vocal Signs and Symptoms List; GFI = Glottic Function Index; VoiSS = Voice Symptom Scale

*SSL cutoff values, total GFI score and total VoiSS score with the highest values of sensitivity, specificity and accuracy

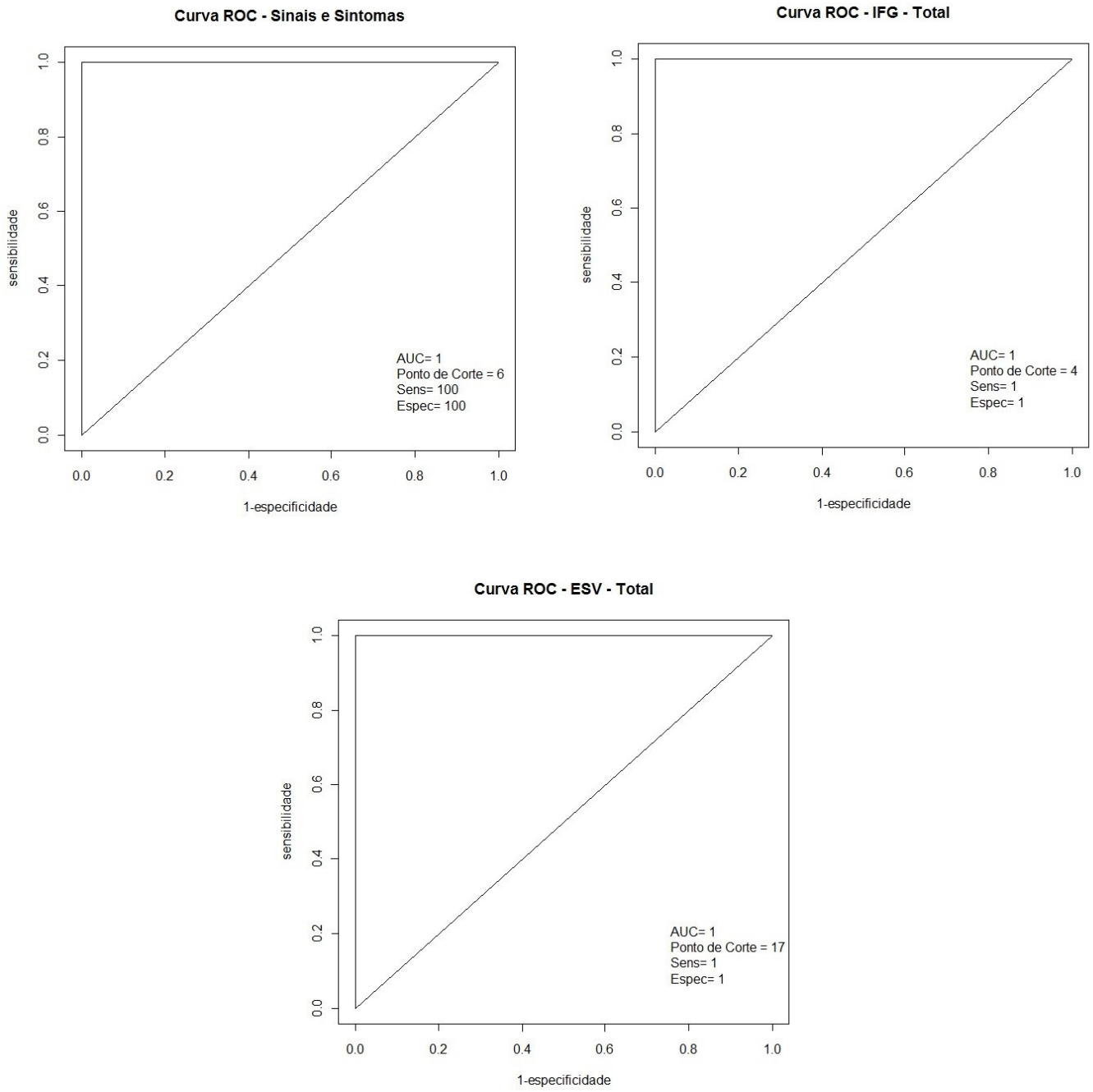

Figure 2. Areas under the ROC curve, sensitivity and specificity values, and cutoff values from the Vocal Signs and Symptoms List, the Glottic Function Index and the Voice Symptom Scale

Subtitle: *Sinais e Sintomas* = Brazilian version of the Vocal Signs and Symptoms List; IGF = Brazilian version of the Glottic Function Index; ESV = Brazilian validated version of the Voice Symptom Scale into Brazilian Portuguese; AUC = area under the curve; *sensibilidade* / Sens = sensitivity; *especificidade* / *Espec* = specificity; Ponto de Corte = cutoff value

(SLP) evaluation, even more so as to not use invasive methods for vocal evaluation[2,3,6,7,10]. Hence, the analysis of vocal data can be used in screening, even for the eligibility of urgency in large populations or services.

Previous studies have shown that dysphonic individuals have, on average, more vocal signs and symptoms than vocally healthy individuals[29], worse self-perception about vocal dysfunction[17], greater vocal losses related to impairment, emotional and physical aspects of the voice[20] and worse vocal self-evaluation[20,24,29], confirming the findings of this study, as shown in Tables 2 and 3. Because the protocols are specific, their dimensions may, to a certain extent, be interchangeable[24], even with non-strong correlations, since each protocol has its particularity of evaluation, as shown in Figure 1.

Patients treated with head and neck tumors may present with swallowing changes (Table 4), which may be transient or permanent, depending on the time of the treatment performed, as well as the type of treatment, such as radiotherapy, chemotherapy, surgery or these modalities of combined form[25-27]. Swallowing changes in patients treated for tumors of the head and neck may

increasingly present with vocal alterations, often at the patient's first sign/complaint, alerting the speech-language pathologist to the need for detailed follow-up of these individuals, both during combined cancer treatment[25-27]and after treatment, aiming at SLP rehabilitation.

The SSL and the GFI and VoiSS instruments were perfect classifiers in the differentiation of subjects with organic dysphonias for head and neck cancer and vocally healthy subjects: 100% sensitivity (does not allow false negatives) and 100% specificity (does not allow false positives), as shown in Table 5 and Figure 2 and previously evidenced in studies with dysphonics in general, for VoiSS[20,30], and in this study, the cutoff values of the VoiSS and the GFI for the oncological population of head and neck cancer with vocal complaints were very close to those of other studies with the same protocols for dysphonics in general[20,30],can be used, with full ownership, as highly reliable screening instruments to which they are evaluated, with important contributions to SLP therapy, since self-assessment protocols are rapid screening instruments and, when they have defined cutoff values for specific populations, can be used in screening of large populations and services with great demands, especially public ones.

CONCLUSION

Individuals treated for head and neck cancer with dysphagia present more vocal signs and symptoms, worse perception of their vocal dysfunction and greater loss in the emotional, physical and impairment aspects of the voice than vocally healthy individuals, regardless of presenting vocal complaint as the main one. The three instruments showed maximum sensitivity and specificity and could be used as screening resources.

The Vocal Signs and Symptoms List (SSL), the Glottal Function Index (GFI) and the Voice Symptom Scale (VoiSS) are perfect classifiers for assessing the specific head and neck oncological population, because they have maximum sensitivity and specificity, with cutoff values defined in 6 points for SSL, 4 points for GFI and 17 points for VoiSS, the latter two with cutoff values for this population very close to other studies with dysphonic in general.

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