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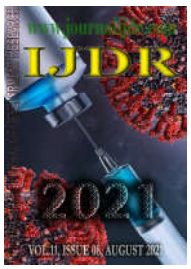

RESEARCH ARTICLE OPEN ACCESS

VIDEOLARYNGOSCOPIC FINDINGS IN PATIENTS WITH RHEUMATOLOGIC DISEASES IN MANAUS, BRAZIL

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ABSTRACT

Introduction: Rheumatologic diseases produce a number of systemic alterations; among them we can mention the local manifestations in the larynx. Laryngeal symptoms can be the first manifestation of rheumatic diseases, and their correct assessment helps the doctor to identify signs of activity of the disease. **Objective:** To characterize any laryngoscopic findings in patients affected by rheumatic diseases that are treated in Manaus, Brazil. **Methodology:** This is a descriptive, qualitative-quantitative and observational study of laryngeal findings in rheumatologic patients, and was conducted at the Department of Otolaryngology and Cervical-Facial Surgery of the Adriano Jorge Hospital Foundation, during the period from May to July 2020, with subsequent analysis by an otolaryngologist. **Results:** We analyzed 46 patients from the rheumatology outpatient clinic at the foundation. Of these, 26 patients were diagnosed with rheumatoid arthritis and 20 with systemic lupus erythematosus. The most prevalent endoscopic findings were in rheumatoid arthritis: posterior laryngeal edema, supraglottic hyperemia and arytenoid mucosal edema, though these varied in their proportions between the two diseases. **Conclusion:** Rheumatologic patients presented laryngeal complaints and endoscopic findings suggestive of nonspecific inflammatory processes were observed, which justifies the importance of the evaluation of the otolaryngologist during all phases of the disease.

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INTRODUCTION

The larynx is an organ that performs various functions, such as phonation, swallowing and breathing. It can be affected by the primary diseases that affect the larynx, as well as numerous systemic diseases that can compromise its functionality. The development of laryngeal symptoms accompanies the inflammatory exacerbation of disease in other organs (WATANABE, 2018). Rheumatologic diseases form a heterogeneous group of disorders that produce systemic alterations that involve the connective tissue of the whole body. For this reason, they can compromise blood vessels, serosa and mucous membranes of the entire aerodigestive tract, particularly the larynx (GUSMÃO, 2014). These diseases affect the larynx by manifesting symptoms such as dysphonia, dysphagia, stridor or dyspnea, which can vary in intensity and severity, and can even be life-threatening as in the case of obstruction of theairway (ENOKI, 2018).The clinical presentation of the larynx in rheumatologic diseases is variable, and laryngeal mucositis, stenoses, granulomas in the cricoid region, arthritis in the cricoarytenoid joint with immobility of the vocal folds, rheumatoid nodules and changes in the vocal folds, the so-called "bamboo nodes", can occur (WATANABE, 2018). Thus, rheumatologic patients with pharyngolaryngological symptoms should always be examined by otolaryngologists, who will be able to detect lesions in the mouth, hypopharynx and larynx, which are places that are difficult to examine without an endoscope.

This is particularly important since laryngoscopic alterations may be a sign of impending exacerbation of the disease in a manner similar to other markers of inflammatory activity (SIMO, 1998).

MATERIALS AND METHODS

This was a descriptive cross-sectional study that, through questionnaires and videolaryngoscopy examinations, evaluated the symptoms and laryngeal alterationsin patients with rheumatologic diseases treated at the rheumatology outpatient clinic of the Adriano Jorge Hospital Foundation (FHAJ) in Manaus, Brazil,in the period from May to July 2020.This was an on demand sample, referred to the department by the rheumatology team of the FHAJ, and 46 patients available for the study were obtained. The participants of this study were older than 14 years of age, of either sex, who had confirmed rheumatologic diseases, and who signed the informed consent form to participate in the research. Pregnant women, smokers, drug users and patients with chronic upper or lower airway diseases and those unable to perform videolaryngoscopy were excluded from the sample. Initially the symptomatological and epidemiological data were collected via a printed questionnaire that was completed by the patients; the type of rheumatologic disease previously diagnosed was obtained from the patients' medical records. Subsequently, the participants were submitted to the videolaryngoscopy examination performed by the team of resident doctors of the Medical

Residency Program in Otolaryngology and Cervical-Facial Surgery at FHAJ, usinga 70º rigid laryngoscope (Endoview), coupled to a portable light source (Storz) and a camera (GoPro Hero 6 Black) adapted for recording the exams.The videos, with omission of the patient's face and voice or name, were recorded using numerical codes, which were stored in a database and were subsequently analyzed by an otolaryngologist who completed specific forms with the findings of the tests and performed the classification of the degree of laryngopharyngeal reflux, which was performed according to the perception of the evaluator, and were not used pH evaluation or upper digestive endoscopy. After collection, the data were analyzed with the help of the Epi Info program version 7.2.3.1 for *Windows*®,which is developed and distributed free of charge by the North American Center for Disease Prevention and Control-CDC, and the level of significance fixed in the application of these statistical tests was 5% (HHS, 2020).The data were organized in graphs and tables, and simple and relative absolute frequencies were calculated for the categorical data. In the analysis of the quantitative data, the median and quartiles (Q_i) were calculated and the Mann-Whitney non-parametric test was applied. In the comparison of categorical variables, Fisher's exact test was applied due to the constraints of the chi-square test. This study was approved by the Research Ethics Committee of Adriano Jorge Hospital Foundation under approval number CAAE31765420.7.0000.0007. Patients who presented alterations in the laryngeal region during the examination were referred for specialized treatment in the otolaryngology department of the Adriano Jorge Hospital Foundation.

RESULTS

The study included 46 patients, previously selected from the specialized rheumatology outpatient clinic at the FHAJ, with a diagnosis of rheumatologic disease as defined by the American College of Rheumatology criteria for Rheumatoid Arthritis and Systemic Lupus Erythematosus (MOTA, 2012; BORBA, 2008). Of the participants evaluated, 4 (8.7%) were male and 42 (91.3%) were female. Ages ranged from 14-71 years and mean age was 48.1 years. The age group of 40-50 years was also the most prevalent (N = 11, 23.9% (Table 1). The time taken for diagnosis of the participants ranged from zero to sixteen years, with an average of 6.5 years, and 45.6% were sick within zero and five years, 32.6% within six and ten years and 21.7% withineleven and sixteen years. Of all the participants evaluated, twenty-six patients (56.5%) had a diagnosis of rheumatoid arthritis (RA) and 20 patients were diagnosed with systemic lupus erythematosus (SLE) (43.5%) (Figure A).

Table 1. Age group according to sex of patients with rheumatologic disease

Age Group	Male (n = 4)		Female (n = 42)		
	f_i	%	f_i	%	Total
14 - 20	-	-	2	100.0	2
20 - 30	2	50.0	2	50.0	4
30 - 40	1	14.3	6	85.7	7
40 - 50	1	9.1	10	90.9	11
50 - 60	-	-	10	100.0	10
≥ 60	-	-	12	100.0	12
Total	4	8.7	42	91.3	46

Table 2. Videolaryngoscopy findings in patients with rheumatoid arthritis

Videolaryngoscopy	Number of patients	%
Normal	4	15
Posterior Edema	13	50
Supraglottic hyperemia	11	42
Mucosal edema of the arytenoid	11	42
Hypertrophy of lingual tonsils	10	38.4
Hyperconstriction of ventricular bands	5	19.2
Salivary stasis in vallecula	3	11.5
Hyperemia in hypofaringe	2	7.7
Triangular slit	3	11.5
Fusiform slit	2	7.7
Vocal fold edema	3	11.5
Vasculodysgenesis	1	3.8
Hemangioma on the basis of tongue	1	3.8
Pachydermia	1	3.8
Polyp	1	3.8
Leukoplasia	1	3.8
Sulcus vocalis	1	3.8
Pseudosulcus	1	3.8

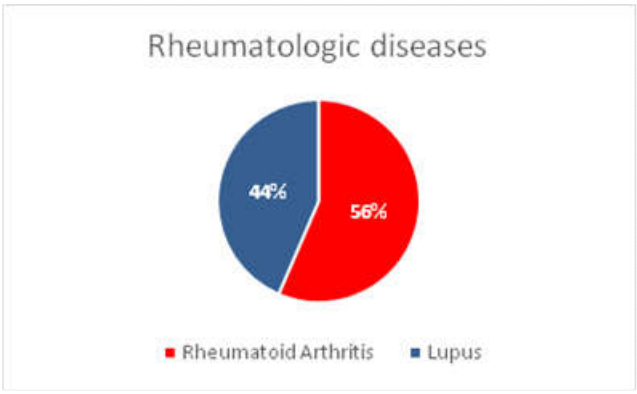

Figure A. Diagnosis of rheumatologic diseases

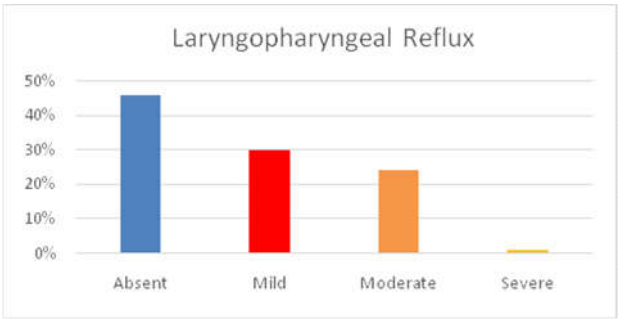

Figure B. Distribution of the degree of laryngopharyngeal reflux in patients with rheumatoid arthritis

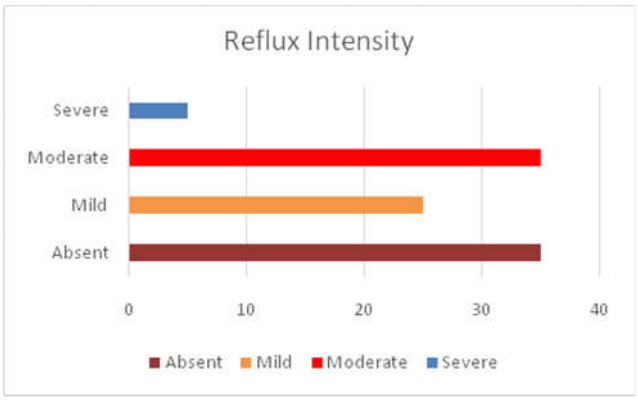

Figure C. Distribution of the degree of laryngopharyngeal reflux in patients with systemic lupus erythematosus

Table 3. Videolaryngoscopy findings in patients with systemic lupus erythematosus

Videolaryngoscopy	Number of patients	%
Normal	3	15
Posterior Edema	14	70
Supraglottic hyperemia	13	65
Edema of arytenoid mucosa	12	60
Hypertrophy of lingual tonsils	2	10
Hyperconstriction of ventricular bands	5	25
Salivary stasis in vallecula	3	15
Hyiperemia in hypofaringe	4	20
Triangular slit	2	10
Fusiform slit	3	15
Vocal fold edema	2	10
Vasculodysgenesis	2	10
Vocal node	1	5
Hemangioma on the base of tongue	1	5
Pachydermia	1	5
Laryngeal papillomatosis	1	5

Rheumatoid Arthritis (RA): Of the participants with RA (N=26), the symptoms reported were dysphonia (69.2%), hawking (57.7%), pharyngeal globus (42.3%) and dry cough (38.4%). Of these patients, 85% presented some

type of alteration witnessed under videolaryngoscopy, among which were posterior edema, supraglottic hyperemia and edema of the arytenoid mucosa, found in 50% (n=13), 42% (n=11) and 42% (n=11) of the patients, respectively (Table 2). The degree of laryngopharyngeal reflux among RA patients was also evaluated, and was found to be absent in 12 patients (46%), mild in 8 patients (30%), and moderate in 6 patients (24%) (Figure B).

Systemic Lupus Erythematosus (SLE): Of the participants with SLE, the most prevalent symptoms were dysphonia (80%), hawking cough (65%), dyspnea (45%) and pharyngeal globus (43.8%). Among these patients, 85% presented alterations witnessed under videolaryngoscopy, with prevalence of posterior edema, supraglottic hyperemia and mucosal edema of the arytenoid, found in 70% (n=14), 65% (n=13) and 60% (n=12) (Table 3). The degree of laryngopharyngeal reflux was analyzed, and found to be mild in 5 patients (25%), moderate in 7 patients (35%) and severe in 1 patient (5%) and absent in 7 patients (35%) (Figure C).

DISCUSSION

This study described the laryngological findings of patients with rheumatologic diseases and laryngeal symptoms and alterations. Laryngeal alterationsin patients with rheumatologic diseases have been described previously and can manifest themselves in different diseases of varying forms and severity. In this sample only RA and SLE were prevalent. The profile of RA patients evaluated in this study was predominantly female, with an age group of adults between 40 and 60 years of age, which is consistent with the literature, and which indicates that the disease mainly affects women over 40 years (NAGAYOSHI, 2018). Castro *et al.* (2012) described the presence of laryngeal symptoms in 70.4% of 27 patients analyzed, the most common being dysphonia (33%) and foreign body sensation (33%). Beirith *et al.* (2013) reported cough and hawking as the most common symptoms in their study, since they occurred in 46.81%. This data is consistent with our sample, in which dysphonia was significant, with a prevalence of 69.2%, followed by hawking in 57.7%, pharyngeal globus (42.3%) and dry cough (38.4%). In 2005, Pereira *et al.* reported that rheumatoid arthritis (RA) is complicated by cricoarytenoid arthritis in 30% of cases. Oropharyngeal inflammation, hoarseness and inspiratory stridor are the most common clinical manifestations, and may evolve with airway obstruction and the need for immediate tracheostomy.However, stridor was not reported by patients in this sample, and this may be related to this symptom being a predictor of airway obstruction, which is not expected in patients in outpatient care. The prevalence of alterations seen under videolaryngoscopy in this study was 85%, which is higher than that seen in other studies,such as those by Beirith (2013) and Pereira (2005), in which alteration rates ranged from 26 to 52%.In patients with RA, during the videolaryngoscopy evaluation, signs of laryngeal involvement with posterior laryngitis (50%), supraglottic hyperemia and mucosal edema of the arytenoidwere observed, both with a prevalence of 42%. These data are similar to those presented by Beirith et al. (2013), in which the main finding was posterior laryngitis in RA patients with a prevalence of 44.7%. The chronic use of medications, such as corticosteroids and anti-inflammatory drugs (hormonal and non-hormonal), and the eating habits of the study population, may be predisposing factors to the higher percentage of posterior laryngitis, and may perhaps be linked to laryngopharyngeal reflux. In their study, Barbosa *et* al (2008) found that the eating habits of the city's population favored the laryngeal involvement through the manifestations of reflux. The laryngeal alterations present in RA patients did not correspond to the disease-specific laryngeal involvement, represented by cricoarytenoid arthritis and rheumatoid nodules in the vocal folds. None of the patients had cricoarytenoid arthritis and nodules.However, further study is necessary using videolaryngostroboscopy examination to better demonstrate the findings in the vocal folds.Thus, it can be inferred that RA and/or the drugs used in its treatment (information contained in medical records) of this disease may affect the larynx in a non-specific way. Among the patients with SLE evaluated in this study, the female gender was predominant, with an age range between 40-50 years of age (mean age of 42 years). These data differ from that found in the findings of the Brazilian Ministry of Health (2014), in which most women were between 15 and 40 years of age. Pickhard *et al.* (2012), in a review of 92 patients, reported the presence of laryngeal symptoms, the most common being dysphonia (68%), dyspnea (56%) and dysphagia (13%). Gusmão *et al.* (2014) conducted a study of several rheumatologic diseases, with only three patients diagnosed with SLE, in which two had dysphonia (67%) and one reported dyspnea (33%). In our participants, the most reported symptoms were dysphonia (80%), hawking (65%), dyspnea (45%) and dry cough (40%). In this sample of patients with SLE, the most frequent findings during videolaryngoscopy were posterior edema, supraglottic hyperemia and mucosal edema of the arytenoid. In a previous study, Reiter *et al.* (2015) described that the main laryngoscopic findings were laryngeal mucosal edema (28%) and vocal fold paralysis (11%), as well as subglottic stenosis and findings suggestive of epiglottitis.It should also be considered that edema of the arytenoid region may be a primary alteration in rheumatologic disease or secondary to laryngopharyngeal reflux, which may be associated with the use of drugs to treat the underlying condition. Bamboo nodes are transversely oriented white or yellowish lesions on the supraglottic face of the middle third of the vocal folds, which give them the characteristic appearance of a piece of bamboo (WATANABE, 2018).These can be found in up to 25% of patients with SLE, which can be observed in the context of an acute episode of SLE in the larynx, according to Todic (2018). However, in our results showed only 1 patient with nodes in vocal folds without the characteristics of bamboo nodes. The rheumatology service of the FHAJ is a referral clinic in Manaus, and thus the sample in this study was composed of patients with regular consultations, presenting a controlled and stable disease. Divergent results could be found in a study involving a greater number of patients, for a longer period of time and including outpatients and inpatients or perhaps evaluating the diseases in different phases, such as in the decompensated phase.

CONCLUSIONS

This study showed that, among rheumatologic patients with laryngological complaints, there is a prevalence of the female gender, aged between 45 and 55 years. The most frequent symptoms in patients in this sample were dysphonia, pharyngeal globus, hawking and dry cough. Among the videolaryngoscopic findings, we observed posterior laryngeal edema, supraglottic hyperemia and mucosal edema of the arytenoid, which may be associated with laryngopharyngeal reflux due to drug treatment of diseases or due to laryngeal involvement of these diseases. Thus, these results reinforce the importance of an otorhinolaryngology evaluation in these patients during all phases of the disease.

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