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SHORT COMMUNICATION

Laryngopharyngeal reflux may be acute, recurrent or chronic disease: preliminary observations

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Abstract

Objective To investigate the mid-to-long-term symptom evolution and treatment findings of laryngopharyngeal reflux (LPR) patients.

Methods Patients with LPR and treated between September 2016 and December 2017 were prospectively followed. The diagnosis consisted of > 1 pharyngeal event at the hypopharyngeal–esophageal multichannel intraluminal impedance-pH monitoring. The treatment consisted of 3- to 9-months diet, stress management and medication according to the type of LPR. Reflux symptom score was used to assess the therapeutic response. Patients were surveyed yearly to know the reflux evolution, the potential recurrence(s) of symptoms, and the approaches used to control the disease.

Results A total of 77 patients completed the evaluations (45 females). The initial treatment duration was 3, 6, or 9 months in 25 (32.5%), 23 (29.9%), and 6 (7.7%) cases before weaning, respectively. Twenty-three patients (29.9%) reported chronic course of the disease. According to the reduction of reflux symptom score, symptoms did not change in 11 (14.3%) patients, while the rest of the patients reported symptom reduction or relief (responder rate of 85.7%). Over time, LPR symptoms never relapsed in 31% of cases, while 38% of patients reported one or several recurrences a year. The recurrence episodes of patients were all adequately treated with medication or diet and did not require long-term medication.

Conclusion Chronic course of the disease was observed in 31% of patients who required long-term medication. Preliminary observations reported that LPR may be classified as acute, recurrent, or chronic disease. The medication weaning is possible in most patients, leading to reduction of cost burden related to LPR treatment.

Keywords Laryngopharyngeal · Reflux · Treatment · Chronic · Laryngeal · Otolaryngology

Introduction

Laryngopharyngeal reflux (LPR) is a prevalent disease in Western countries accounting for 10–30% of population [1]. The US national cost burden of diagnosing and treating LPR may be 5.6 times the cost of treating gastroesophageal reflux disease (GERD), with a total expenditure estimated as > $50 billion annually [2]. Because LPR is recognized as co-factor in pathogenesis of some otolaryngological disorders, including otitis media, chronic rhinosinusitis, or laryngitis, the cost burden could be higher than currently presumed [1]. Thus, it remains important to understand the long-term evolution of the disease. To date, there are no data in the literature about the mid-to-long-term clinical evolution of patients who were initially diagnosed and treated for LPR.

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Methods

To study the mid-to-long-term evolution of LPR, 80 LPR patients were followed over the 3-years post-treatment of their LPR disease. Depending on the disease evolution, patients were followed at least one (cured patients) to several times (recurrent or chronic disease) per year. Patients were initially diagnosed according to the occurrence of > 1 pharyngeal reflux event at the 24-h hypopharyngeal–esophageal multichannel intraluminal impedance-pH monitoring (HEMII-pH) [3]. The initial treatment combined diet, proton pump inhibitors, alginate or magaldrate depending on the HEMII-pH findings (acid, weakly acid or alkaline reflux disease) [3]. The drug titration was performed regarding the pre- to post-treatment reflux symptom score (RSS) reduction, considering the following response definitions: mild (RSS reduction from 20 to 40%), moderate (41 to 60%), high (61 to 80%), and complete (> 80%) responses [4]. Once they completed the treatment regimen, responder patients were progressively weaned from all medications and were instructed to adhere to the diet over the long term. Some of them could not be weaned or did not respond to treatment and were categorized as individuals with chronic course. Some of these patients benefited from second HEMII-pH ($N = 10$) that confirmed the diagnosis. In cases of recurrence of LPR symptoms post-weaning period, patients were instructed to improve the diet adherence or to take 2-months medication. To study the evolution of patients over the months/years following the therapeutic period, we surveyed patients yearly to know the reflux evolution, the potential recurrence(s) of symptoms, and the approaches used to control the disease. The IRB approved the study protocol (CHUSP,n°BE076201837630) and informed consent was obtained.

Statistical analyses were performed using the Statistical Package for the Social Sciences for Windows (SPSS version 27.0; IBM Corp, Armonk, NY, USA). According to data distribution, the following tests were used: Kruskal–Wallis, Mann–Whitney *U* test, and Wilcoxon rank test. The association between outcomes was investigated with multivariate analysis. A level of significance of $p < 0.05$ was used.

Results

Seventy-seven patients treated between September 2016 and December 2017 were prospectively followed. The clinical features of patients are presented in Table 1. There were 45 females. The mean age was 52.0 ± 16.7 yo.

Table 1 Clinical features of patients

Characteristics	LPR patients ($N = 77$)
Mean age (SD)	52.0 ± 16.7
Body mass index	25.2 ± 4.7
Gender (N, %)	
Male	32 (41.6)
Female	45 (58.4)
Gastrointestinal endoscopy	$N = 56$
Normal	7 (12.5)
Esophagitis	29 (51.8)
Hiatal hernia	20 (35.7)
LES insufficiency	32 (57.1)
Gastritis	25 (44.6)
Helicobacter Pylori infection	2 (3.6)
Types of LPR at the HEMII-pH	
Acid LPR	32 (41.6)
Weakly acid LPR	28 (36.4)
Nonacid LPR	17 (22.1)
HEMII-pH feature (m ± SD)	
Pharyngeal acid reflux episodes	45.9 ± 75.2
Pharyngeal nonacid reflux episodes	28.3 ± 23.5
Pharyngeal reflux episodes upright	23.8 ± 16.8
Pharyngeal reflux episodes supine	4.4 ± 5.5
Pharyngeal reflux episodes (total)	73.9 ± 86.8
GERD	
Number of patients (%)	40 (51.9)
Percentage of time with distal pH < 4	7.4 ± 13.9
DeMeester score	24.8 ± 43.3

GERD gastroesophageal reflux disease, *HEMII-pH* hypopharyngeal esophageal multichannel intraluminal impedance-pH monitoring, *LPR* laryngopharyngeal reflux, *SD* standard deviation

Table 2 Short-term treatment outcomes of patients

Treatment outcomes	*N* (%)
Responder rates	
No response (chronic course)	11 (14.3)
Mild response	4 (5.2)
Moderate response	13 (16.9)
High response	27 (35.1)
Complete response	22 (28.5)
Duration of treatment	
3 months	25 (32.5)
6 months	23 (29.9)
9 months	6 (7.7)
No weaning of medication(s)	23 (29.9)

Mild and moderate responses consisted of 20-to-40 and 41-to-60% reduction of initial RSS, while high and complete responses were 61-to-80% and > 80% of RSS reduction. Abbreviation: *RSS* reflux symptom score

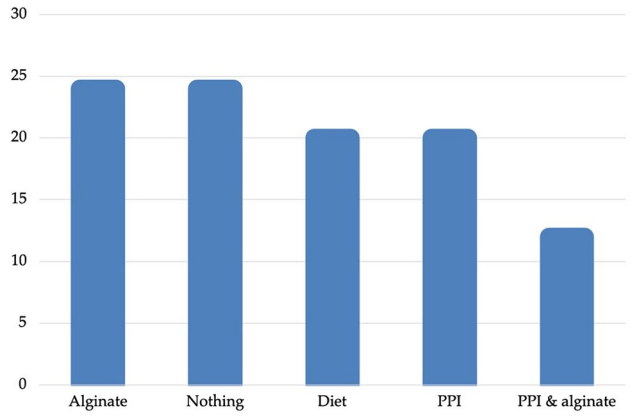

Fig. 1 Reflux types and treatments for recurrence. Reflux may be acute (31%), chronic (31%), or recurrent (38%) (**A**), and is treated with alginate, diet, PPIs, or PPI/alginate combination (**B**)

The initial treatment duration was 3, 6, or 9 months in 25, 23, and 6 cases before weaning, respectively (Table 2). Twenty-three patients (29.9%) reported chronic course of the disease. According to the reduction of RSS, symptoms did not change in 11 (14.3%) patients, while the rest of the patients reported symptom reduction or relief (Table 2).

The mid-to-long-term follow-up reported that LPR did not recur in 24 (31.1%; acute disease) patients, while symptoms recurred 1–2 or 3–5 times yearly in 11 (14.4%) and 18 (23.4%; recurrent disease) patients, respectively. Symptoms recurred post-medication weaning or never reduced in 24 patients, corresponding to a chronic course rate of 31.1% (Fig. 1A). Seven patients (9.1%) did not adhere to diet recommendations in the post-weaning period, corresponding to one acute, 4 recurrent and 2 chronic course diseases. Interestingly, we observed that the baseline RSS of acute LPR (79.4 ± 64.0) was significantly lower than the baseline RSS of recurrent (108.0 ± 74.1) and chronic (144.8 ± 65.4) LPR (Kruskal–Wallis; $p = 0.032$). Recurrent patients recognized treating recurrent symptoms with 1- to 3-months alginate (24%), PPI (20%), or PPI and alginate (12%) therapy (Fig. 1B). Twenty percent treated recurrent LPR with diet recommendations. In 24% of cases, patients did nothing and reported that symptoms progressively disappear (Fig. 1B). At the end of the study, 50% of patients stated that they would be treated with diet and no medication.

Discussion

There is a lack of data about the evolution of LPR patients after the initial therapeutic course. In this prospective preliminary study, we observed three LPR profiles consisting of acute, recurrent, and chronic disease. Acute LPR may be defined as a disease that does not seem to relapse over the years following the treatment period. Approximately one-third of patients experienced symptom recurrence several times per year, which may be adequately controlled with short-term diet or medication. This pattern may be defined as recurrent LPR and may not require long-term medication. As reported by Koufman [5, 6], LPR may present as a chronic disease. One-third of patients reported chronic course of the disease with immediate recurrence of symptoms when the treatment was stopped or ineffective treatment although diagnosis confirmation through a second HEMII-pH study. This chronic course of the disease led us to define the LPR as chronic LPR. This classification may sound like with some rhinosinusitis classifications [7], classifying rhinosinusitis as acute, acute recurrent, or chronic, and is just the reflect of different clinical pattern of inflammatory disease of the upper aerodigestive tract. An important key message of this short paper is that we may treat most LPR patients with 3- to 6-months therapy and wean patients for the long-term. The recurrence of symptoms may be adequately treated with short-term treatment, including strict diet, and does not require long-term PPI or alginate. Diet seems to be an important therapeutic way, because natural, adequate for overall health, and commonly accepted by patients [8]. Future studies are needed to identify predictive factors of acute, recurrent, or chronic LPR disease, such as the baseline RSS severity, and to develop personalized therapeutic course, which may consider the cost and the uselessness of long-term medication in most patients.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest. There was no commercial affiliation.

Ethical approval The local ethics committee approved the study protocol (CHUSP, n°BE076201837630) and informed consent was obtained).

Ethical standard The study is compliant with ethical standard.

Informed consent Obtained.

References

1. Kamani T, Penney S, Mitra I, Pothula V (2012) The prevalence of laryngopharyngeal reflux in the English population. Eur Arch Otorhinolaryngol 269(10):2219–2225. https://doi.org/10.1007/s00405-012-2028-1

2. Francis DO, Rymer JA, Slaughter JC et al (2013) High economic burden of caring for patients with suspected extraesophageal reflux. Am J Gastroenterol 108:905–911
3. Lechien JR, Carroll TL, Bobin F, Muls V, Rodriguez A, Horoi M, Dequanter D, Crevier-Buchman L, Hans S, Saussez S (2021) Influence of age and sex on clinical and therapeutic features of Laryngopharyngeal reflux. Otolaryngol Head Neck Surg. https://doi.org/10.1177/01945998211020284
4. Lechien JR, Bobin F, Muls V, Mouawad F, Dapri G, Dequanter D, Horoi M, Thill MP, Rodriguez Ruiz A, Saussez S (2021) Changes of laryngeal and extralaryngeal symptoms and findings in laryngopharyngeal reflux patients. Laryngoscope 131(6):1332–1342. https://doi.org/10.1002/lary.28962
5. Koufman JA (1991) The otolaryngologic manifestations of gastroesophageal reflux disease (GERD): a clinical investigation of 225 patients using ambulatory 24-hour pH monitoring and an experimental investigation of the role of acid and pepsin in the development of laryngeal injury. Laryngoscope 101(4 Pt 2 Suppl 53):1–78
6. Koufman JA, Aviv JE, Casiano RR, Shaw GY (2002) Laryngopharyngeal reflux: position statement of the committee on speech, voice, and swallowing disorders of the American Academy of Otolaryngology-Head and Neck Surgery. Otolaryngol Head Neck Surg 127(1):32–35
7. Chan Y, Kuhn FA (2009) An update on the classifications, diagnosis, and treatment of rhinosinusitis. Curr Opin Otolaryngol Head Neck Surg 17(3):204–208. https://doi.org/10.1097/MOO.0b013e32832ac393
8. Zalvan CH, Hu S, Greenberg B, Geliebter J (2017) A comparison of alkaline water and mediterranean diet vs proton pump inhibition for treatment of Laryngopharyngeal reflux. JAMA Otolaryngol Head Neck Surg 143(10):1023–1029