# CHARACTERISTICS AND MANAGEMENT OF LARYNGOPHARYNGEAL REFLUX IN THE ELDERLY: A CASE REPORT

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## ABSTRACT

*Laryngopharyngeal reflux is a condition resulting from the retrograde flow of stomach acid through the distal esophagus into the laryngopharyngeal area. The prevalence of laryngo-pharyngeal reflux in the elderly population remains uncertain. Therefore, the symptoms, findings, and therapy for laryngo-pharyngeal reflux in the elderly require further investigation. To analyze the characteristics and management of laryngo-pharyngeal reflux in the elderly. A case of laryngopharyngeal reflux in a 70-year-old woman who frequently experiences sudden choking sensations is presented in this report. Other symptoms include hoarseness, a sensation of throat obstruction, and chest burning. We explored literature on laryngopharyngeal reflux in the elderly through PubMed, PMC, and Google Scholar databases to discuss the case. Laryngopharyngeal reflux in the elderly has a lower reflux symptoms index but a higher reflux finding score. Mental health factors significantly influence laryngopharyngeal reflux incidence in the elderly. Therefore, besides pharmaco-logical therapy, additional non-pharmacological therapies need to be considered to ensure effective laryngopharyngeal reflux treatment. Elderly patients diagnosed with laryngopharyngeal reflux have different presentations and management of the disease compared with younger patients.*

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## INTRODUCTION

Laryngopharyngeal reflux (LPR) is a condition resulting from the retrograde flow of stomach acid through the distal esophagus into the laryngopharyngeal area. LPR induces laryngeal symptoms, including throat clearing, hoarseness, pain, throat irritation sensation, cough, excessive throat mucus, and dysphonia. The term LPR was first introduced in 1996 by Kauffman et al. Initially, LPR was considered another form of Gastroesophageal Reflux Disease (GERD) due to the reflux of gastric contents into the upper aerodigestive tract[1]. However, by 2002, the American Academy of Otolaryngology-Head and Neck Surgery defined LPR as the backflow of gastric

contents into the laryngopharynx[2]. Specific GERD symptoms such as heartburn and regurgitation are not necessarily present in LPR patients, as LPR exhibits distinct clinical manifestations. In LPR, reflux of acid into the lower esophagus is considered normal and thus not diagnosed as GERD. LPR primarily emphasizes acid reflux into the upper esophagus, directly affecting the laryngopharynx[1].

The progression of LPR is associated with high-fat diets, low-protein diets, stress or anxiety, and smoking. Meanwhile, obesity is reported to exacerbate the LPR. Due to its pathophysiological, diagnostic, and therapeutic characteristics, LPR necessitates direct involvement from otolaryngology specialists[2].

LPR in elderly patients and young patients is different, and this difference can be seen from the reflux score index (RSI), reflux finding score (RFS), and the therapy given. A study conducted by Lechien in 2021 stated that patients aged >60 years had lower RSI and higher RFS[3]. This is inversely proportional to young patients, namely higher RSI and lower RFS. On the other hand, the therapy given to elderly patients and young patients is also different. This is because in elderly patients it is necessary to consider that mental health in the form of somatic anxiety can influence the incidence of LPR, so that in addition to pharmacological therapy giving PPI to LPR it is necessary to give additional medication such as anti-anxiety drugs and non-pharmacological therapy such as anti-reflux diet, healthy lifestyle, and cognitive behavioral therapy (CBT) specifically for elderly patients with symptoms of anxiety/depression so that LPR treatment can be effective[4–6].

## Case Report

A 70-year-old woman presented with complaints of frequent sudden choking sensations and difficulty breathing for the past 3 months. Over the last 3 months, the patient reported experiencing >5 attacks. Additionally, the patient mentioned frequent throat clearing but difficulty in expectorating phlegm and occasional dry cough, albeit denying any changes in voice/ hoarseness. Over the past year, the patient has often experienced heartburn and reported sleeping disturbances for the past three months. There were no complaints regarding the ears and nose. Reflux symptom index (RSI) queried during the anamnesis revealed breathing difficulty (4), frequent throat clearing (2), heartburn, warmth sensation, digestive disturbances (3), and coughing (2), resulting in a score of 111.

Upon physical examination, the patient was in good overall condition with mild pain, alert mentation, blood pressure of 160/90 mmHg, heart rate of 89 beats per minute, respiratory rate of 20 breaths per minute, and temperature of 36.8°C. General status was within normal limits. Local examination revealed granulation in the oropharynx and post-nasal drip. Ancillary examination was conducted using fiber optic laryngoscopy (FOL), as shown in Figure 1.

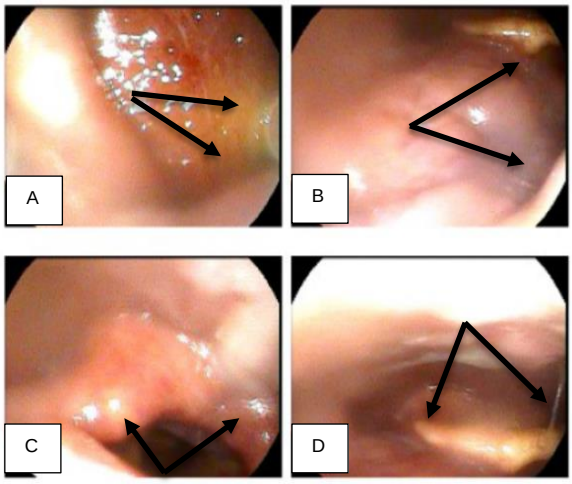


**Figure 1.** FOL examination results

**Notes:** Patients with LPR often reported hypertrophic, hyperemic, and thick secretions in the laryngeal mucosa (A); narrow impression and thick secretions in laryngeal aditus (B); bilateral edema, bilateral hyperemia, and thick secretions found in arytenoids (C); bilateral edema, bilateral hyperemia, and thick secretions noted in ventricular folds (D)

The FOL examination results were adjusted with the reflux finding score (RFS) to aid in the diagnosis of LPR. The identified RFS included subglottic edema (2), arytenoid hyperemia (2), severe diffuse laryngeal edema (3), severe posterior commissure hypertrophy (3), and endolaryngeal mucus (2), resulting in a score of 12.

Based on the history, physical examination, and ancillary tests, the patient was diagnosed with LPR. Medication therapy for the patient consisted of Omeprazole tablets 40 mg twice daily, Sucralfate syrup 3 times daily, and Chlordiazepoxide HCL-Clidinium bromide tablets 3 times daily as an anxiolytic. Non-medication treatment included controlling dietary patterns (reducing intake of fatty and acidic foods) and setting a priority scale of daily activities.

## DISCUSSION

LPR represents an inflammatory process in the upper respiratory tract, particularly in the larynx, involving the reflux of gastroduodenal fluids onto the laryngeal mucosa, resulting in morphological changes in the aerodigestive tract. Gastroduodenal fluids containing pepsin, trypsin, bile salts, and other proteins can irritate the lower esophagus, stimulating chemoreceptors and triggering cough reflexes, leading to mucosal injury, inflammatory reactions, epithelial thickening, and microtrauma[4,7].

In the elderly, the mechanisms underlying LPR involve reduced salivary flow and bicarbonate secretion, which are associated with decreased acid neutralization during reflux. Additionally, in the elderly, esophageal motility and pressures of the Lower Esophageal Sphincter (LES) and Upper Esophageal Sphincter (UES) weaken, theoretically contributing to increased LPR incidence. The diagnosis of LPR is established based on the Reflux Symptom Index (RSI), Reflux Finding Score (RFS), positive response to empirical therapy trials, or Hypopharyngeal–Esophageal Multichannel Intraluminal Impedance pH monitoring (HEMII-pH). However, diagnosis confirmation of LPR is more commonly achieved using RSI and RFS[7,8].

RSI items are essential questions that need to be asked when patients present with voice changes or hoarseness in otolaryngology clinics. Sataloff RT mentioned in 2010 that 10% of patients visiting ENT clinics have LPR, with almost 100% complaining of hoarseness upon presentation[9]. According to a systematic review by Lechien JR in 2022, the most common clinical symptoms of LPR patients

include dysphonia, throat irritation sensation, throat pain, odynophagia, throat mucus accumulation, throat clearing, and cough, as adjusted by RSI[7]. There are 9 RSI items that can be queried to conclude whether a patient is likely to have LPR. These symptoms include hoarseness, throat clearing, throat mucus (postnasal drip), swallowing difficulty, breathing difficulty, cough after eating, bothersome cough, throat irritation sensation, heartburn, chest pain, digestive disturbances, and acid regurgitation. The RSI score ranges from 0-45, and a score >13 indicates a likelihood of LPR[1,10].

FOL was assessed based on RFS. The assessment is conducted by examining eight items included in the RFS, which include subglottic edema, ventricular obliteration, arytenoid erythema, vocal fold edema, diffuse laryngeal edema, posterior commissure hypertrophy, granulation, and thick endolaryngeal mucus. The score range is between 0-26, and if a score > 7 is found, the patient can be diagnosed with LPR with 95% confidence[11].

The most common findings in elderly LPR patients include posterior commissure hypertrophy, laryngeal erythema, anterior pillar erythema, laryngopharyngeal erythema, tongue tonsil hypertrophy, and retro cricoid edema[4,12]. A study by Massawe et al. in 2020 reported the most frequent findings include thick endolaryngeal mucus, vocal fold edema, and ventricular obliteration, with percentages of 90.9%, 88.6%, and 72.7%, respectively[13]. Additionally, a study by Lechien et al. in 2022 regarding the influence of age and gender on the clinical and therapeutic aspects of LPR found no significant effects of age, smoking, alcohol consumption, or dietary patterns on oral, pharyngeal, and laryngeal signs[4].

In elderly individuals over 60 years old suspected of LPR, there is a tendency for lower RSI scores compared to younger individuals, but it is suspected that elderly individuals with low RSI may have high RFS. This was evidenced in patients with RSI scores of 11 and RFS scores of 13. A study by Lechien JR et al. in 2017 explained that while elderly individuals over 60 years old suspected of LPR tend to have lower RSI scores than younger individuals, the quality of life in elderly LPR patients is lower than in younger groups due to reduced subjective perception of LPR symptoms[5].

Research by Cervera-Paz and Jordano-Cabrera in 2019 reported a 9.8% decrease in RSI scores with increasing age in elderly patients. In conclusion, several studies indicate that the elderly exhibit fewer LPR-related symptoms, which may affect patient quality of life[12].

Mental health issues in the elderly, such as somatic anxiety, should be considered as the presence of the effect of LPR. Research reports that LPR patients experience higher psychological pressure than normal individuals, leading to decreased quality of life[14]. Decreased quality of life is caused by cognitive process disturbances marked by forgetfulness, confusion, and suspicion; affective disturbances including fatigue, indifference, and irritability; and behavioral disturbances marked by reluctance to interact with others and inability to self-care[15]. Elderly patients often experience cognitive, somatic, sleep disturbances, fatigue, loss of interest, hopelessness, concerns about the future, and anxiety[16]. A study by Kang et al. in 2023 explains that LPR patients have more severe somatic anxiety symptoms, which are related to LPR-related symptoms[14]. The

administration of anxiolytic medication should be considered in elderly LPR patients in addition to proton pump inhibitor (PPI) therapy, which is the primary management for LPR patients[17]. Besides pharmacological therapy, non-pharmacological therapy is also necessary for LPR patients, including recommending an anti-reflux diet for all patients and reassessing after 3 months of dieting. A low-fat, low-sugar, high-protein, alkaline, and plant-based diet, healthy lifestyle modifications, avoidance of smoking/ alcohol, at least 30 minutes of daily exercise, and weight loss for obese patients are cost-effective treatment approaches[6,18]. For elderly LPR patients with proven mental health issues such as anxiety, stress, and depression, cognitive-behavioral therapy (CBT) should be conducted, as CBT is an empirically supported first-line intervention for mental health disorders such as anxiety[19,20].

The latest research conducted by Cui Na et al. in 2024 regarding the treatment of LPR states that PPI is still the main drug suitable for treating LPR cases. Besides, treatment using PPI can also be combined with gastroenterokinetic drugs and H2 receptor antagonists. Apart from pharmacological therapy, behavioral therapy is also one of the recommended therapies that can be given to LPR patients. In cognitive behavioral therapy, psychiatrists use a variety of behavioral therapies, including stress management, problem-solving, and satisfaction management, to improve patients' throat symptoms, and these have been proven to be safe and effective options. In a recent study, it was also stated that hypnotherapy for patients experiencing LPR symptoms has been comprehensively studied as a form of CBT[21].

Surgical intervention is recommended when pharmaceutical management, diet, and lifestyle modifications fail in the patients. Nissen Fundoplication surgery, which involves wrapping the upper part of the stomach around the lower esophagus to limit gastric reflux, has been proven effective in reducing LPR symptoms should conservative treatments fail[6,22].

## CONCLUSION

The clinical presentation, clinical examination and therapy of LPR in the elderly are different from those of adult patients. Pharmacological therapy related to the mental health of the elderly and non-pharmacological such as cognitive behavioral therapy (CBT) needs to be applied to elderly patients with symptoms of anxiety/depression so that LPR treatment can be effective.

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## CONFLICT OF INTEREST

All Authors have no conflict of interest

## PATIENT CONSENT FOR PUBLICATION

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## AUTHOR CONTRIBUTION

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