11/4 Meeting-Journal reading

The Incidence and Implication of Helicobacter pylori Infection in the Setting of Reinke's Edema

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The Incidence and Implication of *Helicobacter pylori* Infection in the Setting of Reinke's Edema

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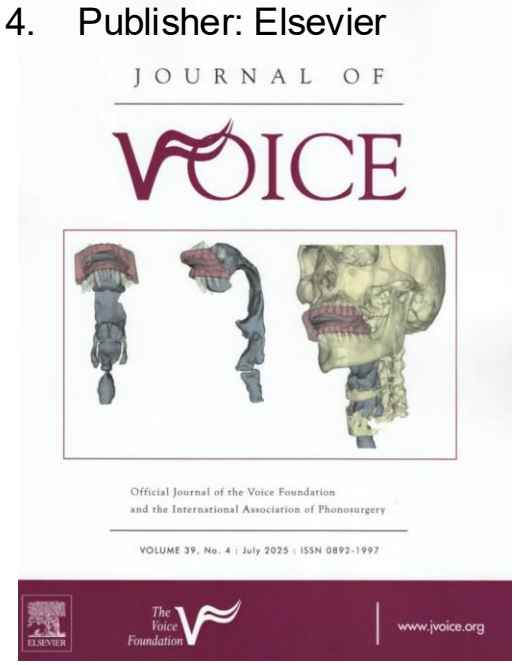


01 Introduction

- **Overview of Reinke's Edema()**

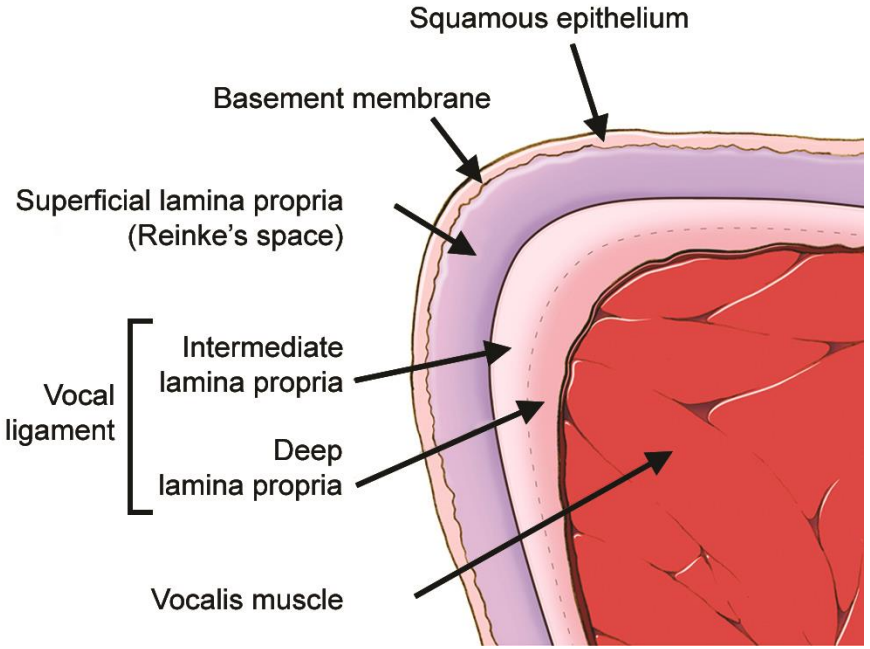
1. Also known as polypoid corditis
2. **Females presenting more than males.**
3. **Chronic benign** inflammatory swelling of the superficial lamina propria , also called Reinke's space （0%-3% chance of dysplasia）
4. Diagnosis is conducted by **laryngoscopy, symptoms and past history**

Reference:
1. Dewan K,. Reinke's edema management and voice outcomes. Laryngoscope Investig Otolaryngol. 2022;7:1042–1050.
2. Tavaluc R, Ann Otol Rhinol Laryngol. 2018;127:812–816.

01 Introduction

- **Overview of Reinke's Edema (RE)**

1. Treatment: Antireflux therapy, smoking cessation, and voice therapy, phonosurgical removal is usually necessary



Reference: References
1. Dewan K,. Reinke's edema management and voice outcomes. Laryngoscope Investig Otolaryngol. 2022;7:1042–1050.
2. Tavaluc R, Ann Otol Rhinol Laryngol. 2018;127:812–816.

01 Introduction

- **Links between laryngopharyngeal reflux （LPR） and Reinke edema**

1. Concept: LPR can carry acid/pepsin to the larynx, irritating the vocal folds and promoting chronic edema in Reinke's space.
2. Clinical hypothesis: Uncontrolled LPR has been proposed as a driver of polypoid vocal-fold changes.
3. Comparative data: Case–control studies have found LPR more frequent in patients with Reinke's edema than in controls, supporting an association.

Reference: 1. Toohill RJ, Kuhn JC. Role of refluxed acid in pathogenesis of laryngeal disorders. Am J Med. 1997;103:100S–106S.
2. Chung JH, Tae K, Lee YS, et al. The significance of laryngopharyngeal reflux in benign vocal mucosal lesions. Otolaryngol Head Neck Surg. 2009;141:369–373.
3. Katsinelos P, Should inspection of the laryngopharyngeal area be part of routine upper gastrointestinal endoscopy? A prospective study. Dig Liver Dis. 2009;41:283–288.

01 Introduction

- **Evidence of Association Between H. pylori and LPR**

1. A study found that H. pylori positive with LPR treated with triple therapy antibiotics had a **90% symptom improvement**, patients treated just for LPR showed only a **40% symptom improvement**.
2. 43.9% prevalence of H. pylori in LPR patients were found in a meta-analysis.

The relationship between H. pylori and LPR has yet to be confirmed.

Reference:1. Yilmaz T, Bajin MD, Gunaydin RO, et al. Laryngopharyngeal reflux and Helicobacter pylori. World J Gastroenterol. 2014;20:8964–8970.
2. Campbell R, Kilty SJ, Hutton B, Bonaparte JP. The role of Helicobacter pylori in laryngopharyngeal reflux. Otolaryngol Head Neck Surg. 2017;156:255–262.

01 Introduction

- **Study aim:**

1. Assess the prevalence of H. pylori infection in those patients presenting with Reinke's edema
2. Evaluate and compare the disease severity in patients who are H. pylori positive to those who are H. pylori negative.

Whether H. pylori positivity correlates with the disease and voice handicap to inform evaluation and management

02 Methods-Study design and patient dataset

- Prospective cohort study in Louisiana State University Health Shreveport (Mar–Aug 2022)
- Adult diagnosed with Reinke's edema via flexible laryngoscopy over a 6-month time period (IRB approval obtained at LSU)
- Demographics such as age, gender, and smoking history were obtained for each patient.

Data collection	**Reason**
voice handicap index, VHI-10 survey (patient-reported)	Fast, validated, patient-centered measure to quantify symptoms(functional, physical, and emotional parts)
IgG serology (primary test)/ histologic examination(gold standard)	Did not have access to needed equipment for measuring exhaled labeled carbon dioxide
Grade & Type rated by a fellowship-trained laryngologist (single rater)	Standardized endoscopic metrics to objectively assess the patient

02 Methods-Definition

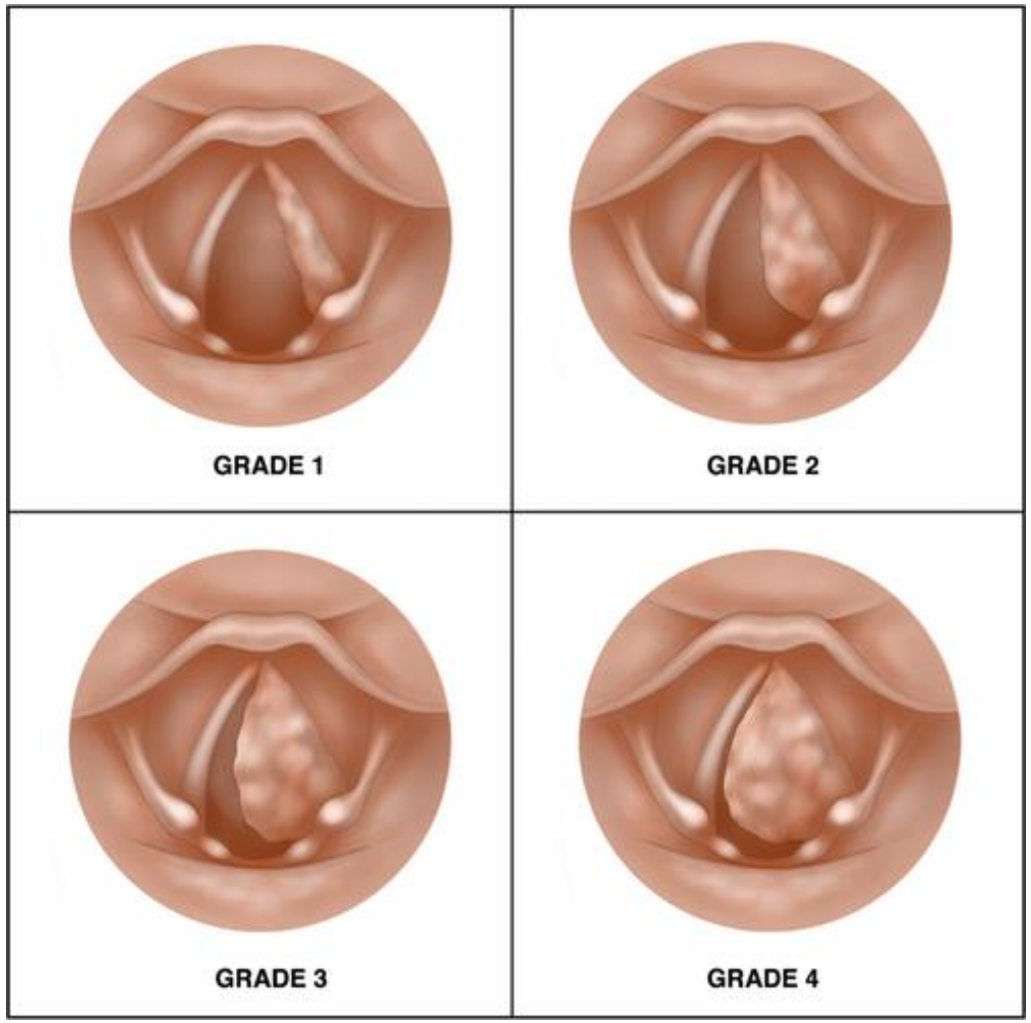
1. Reinke's Grade (1–4) by proportion of glottic airway obstruction / polypoid burden (Tan et al.). 1: ≤25% ; 2: 25–50% ; 3: 50–75% ; 4: >75%.
2. Reinke's Type (1–4) (Yonekawa): 1 unilateral ; 2 bilateral ; 3 unilateral + polyp ; 4 bilateral + polyps
3. Voice handicap: VHI-10

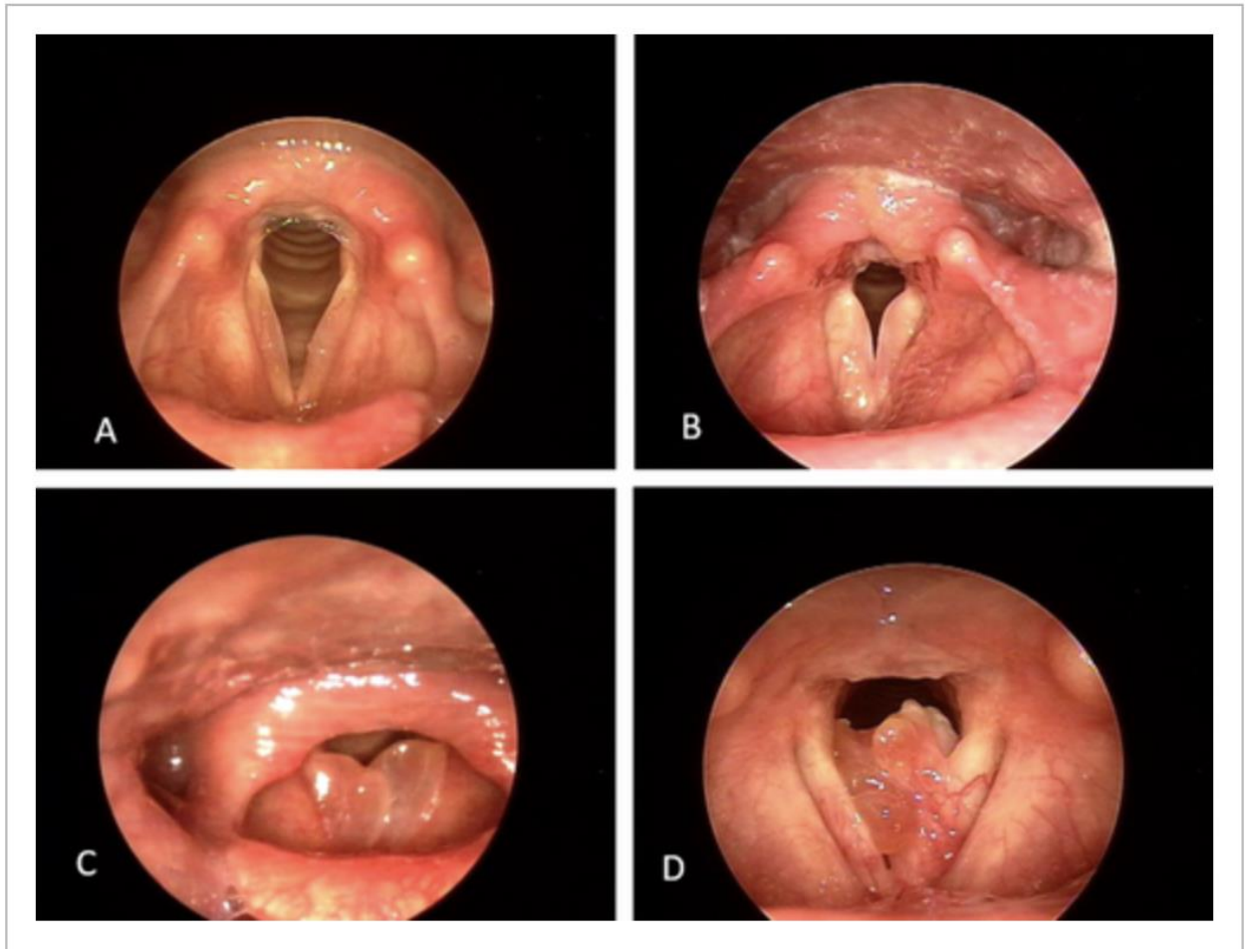
   (from 0 being never to 4 being always)

VHI-10 Total
My voice makes it difficult for people to hear me.
People have difficulty understanding me in a noisy room.
My voice difficulties restrict personal and social life.
I feel left out of conversations because of my voice.
My voice problem causes me to lose income.
I feel as though I have to strain to produce voice.
The clarity of my voice is unpredictable.
My voice problem upsets me.
My voice makes me feel handicapped.
People ask, "What's wrong with your voice?"

Reference: 1. *Tan et al., 2017, Laryngoscope — RE clinical grading.* 2. *Yonekawa, 1988, Auris Nasus Larynx — classic RE typing/outcomes.*
3. Arffa et al., 2012, J Voice — VHI-10 normative values

02 Methods-Definition





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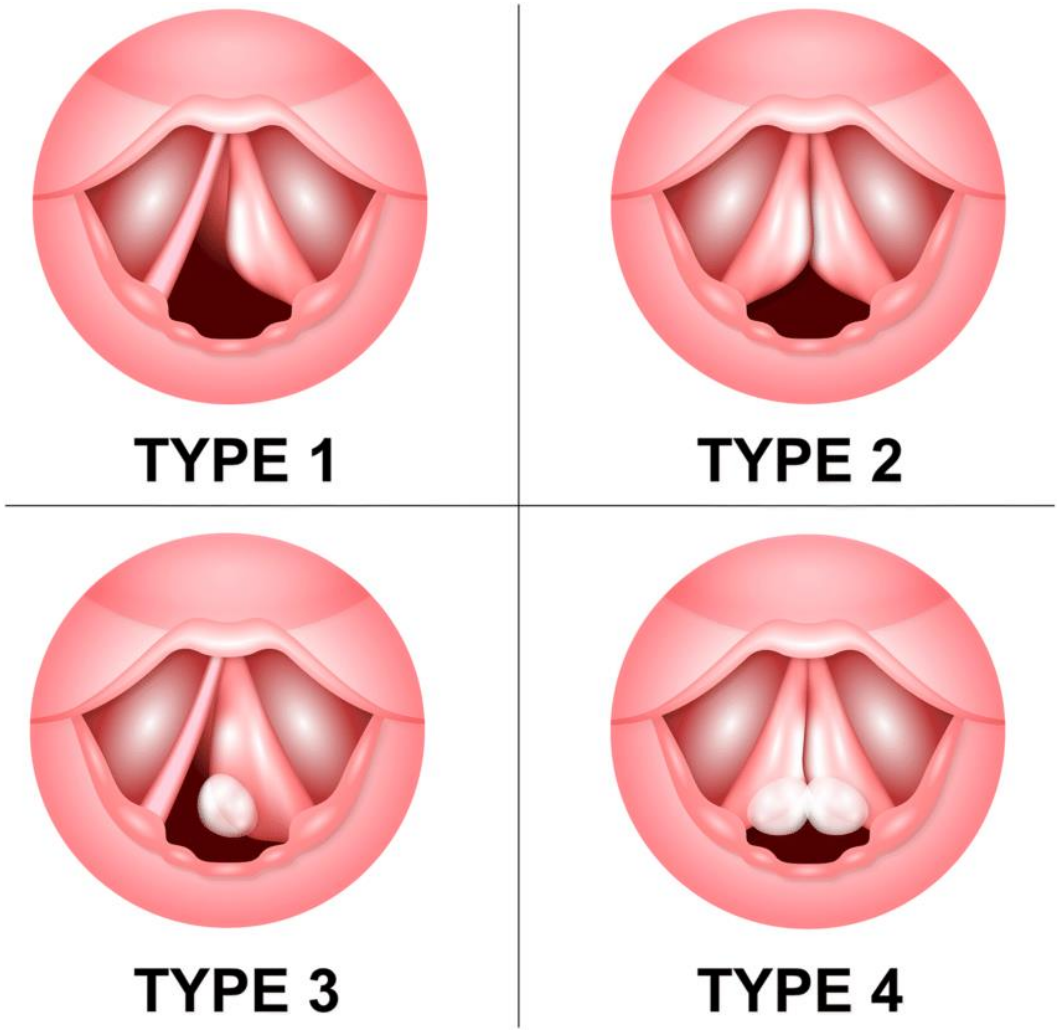

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03 Results: Cohort Characterestics

- 31 patients, 19% were male, average age 53.8 ± 8.6 years.
- Duration of smoke exposure: 26.2 ± 20.8 years.
- **38.7% of the cohort had a positive** H. pylori test.
- Women older than men (54.4 vs 51.2 y, p=0.04); men had higher pack-years (39.1 vs 23.1, p=0.03)
- **No significant difference** in VHI-10 scores/ difference in H. pylori rates between men and women.

03 Results

- **Voice outcomes (VHI-10)**

1. **Total VHI-10 higher (worse) in HP-negative vs HP-positive** (p=0.05).
2. Four VHI-10 items significantly worse in HP-negative:

- **Endoscopic severity**

1. Mean Grade 2.1 ± 0.99 ; mean Type 2.5 ± 1.04.
2. **HP(+) patients had higher Grade and Type** (p=0.01 and p=0.03).

03 Results

TABLE 1.
The Average Score of *H. pylori* Positive and *H. pylori* Negative Patients in Each Domain of the VHI-10 As Well As the Total Score

	Helicobacter pylori (+)	*Helicobacter pylori* (-)	*P* value
VHI-10 Total	15.29	23.72	0.05
My voice makes it difficult for people to hear me.	1.43	2.55	0.04
People have difficulty understanding me in a noisy room.	1.43	2.82	0.05
My voice difficulties restrict personal and social life.	1.14	2.36	
I feel left out of conversations because of my voice.	0.86	1.91	
My voice problem causes me to lose income.	0.71	0.82	
I feel as though I have to strain to produce voice.	1.54	2.82	
The clarity of my voice is unpredictable.	2.29	2.73	
My voice problem upsets me.	2.29	3	
My voice makes me feel handicapped.	1.29	2.18	
People ask, "What's wrong with your voice?"	2.29	2.55	0.05

TABLE 2.
Reinke's Edema Severity As Assessed by the Average Grade and Type in *H. pylori* Positive and *H. pylori* Negative Patients

	Helicobacter pylori (+)	*Helicobacter pylori* (-)	*P* value
Grade	2.58	1.79	0.01
Type	2.92	2.21	0.03

04 Discussion-A Focused Review of Association

- **HP & benign lesions:** Frequent H. pylori in vocal fold polyps/nodules → consider eradication in selected cases.
- **Tissue-level signal (biopsy/PCR):** 1. HP positivity in laryngeal specimens from polyps/laryngitis: ~32–46% vs ~9% controls.
  2. cagA gene detected in 23.3% of 30 benign-larynx cases.
- **Reflux cofactor:** LPR is present in ~50% of laryngeal/voice-disorder patients, suggesting a common accompaniment.

Reference: 1. Cekin E, Ozyurt M, Erkul E, et al. The association between Helicobacter pylori and laryngopharyngeal reflux in laryngeal pathologies. Ear Nose ThroatJ. 2012
2. Rouev P, Chakarski I, Doskov D, et al. Laryngopharyngeal symptoms and gastroesophageal reflux disease. J Voice. 2005
3. Youssef TF, Ahmed MR. Treatment of clinically diagnosed laryngopharyngeal reflux disease. Arch Otolaryngol Head Neck Surg. 2010

04 Discussion- A Focused Review of Association

- Cancer context: H. pylori shows prognostic relevance in laryngeal/hypopharyngeal cancer; chronic inflammation is central.
- Mechanism (hypothesis): HP positive refluxate may amplify laryngeal inflammation, aggravating RE morphology.

H. pylori may associate with RE via reflux, increasing endoscopic severity; symptoms vary, causality unproven.

Reference: Guilemany JM, Prognostic significance and association of Helicobacter pylori infection in pharyngolaryngeal cancer. Eur Arch Otorhinolaryngol. 2014

04 Discussion- Evaluation and Interpretation of Key Results

- Sample sex mix: 19% male, 81% female in this cohort.
- Consistency with literature: Women seek care more often for RE, likely because pitch lowering is more noticeable.
- Smoking exposure: Men with RE present with significantly greater cumulative smoking exposure than women.

04 Discussion- Evaluation and Interpretation of Key Results

- Finding: HP(+) patients showed lower VHI-10 than HP(−) (less perceived handicap).
- Hypothesis: HP-driven inflammation → stiffer/fibrotic SLP → less edema/oscillation → symptom–endoscopy mismatch.
- Immunology note: In cross-sectional data, HP carriage links to lower atopy risk (asthma/rhinitis/AD).

H. pylori can have **both harmful and beneficial effects** in patients with upper respiratory diseases, just as it can in laryngeal diseases

Reference: 1. Taube C, Müller A. The role of Helicobacter pylori infection in the development of allergic asthma. Expert Rev Respir Med. 2012.
2. Arnold IC, Hitzler I, Müller A. The immunomodulatory properties of Helicobacter pylori confer protection against allergic and chronic inflammatory disorders. Front Cell Infect Microbiol. 2012
3. . Blaser MJ, Chen Y, Reibman J. Does Helicobacter pylori protect against asthma and allergy? Gut. 2008

04 Discussion-Suggestion and Limitations

- Suggestion:

In patient's Reinke's edema who do not improve with voice rest and smoking cessation, testing for H. pylori may be worthwhile

- Limitations:

1. More participants are needed (at least 100 patients in next study)
2. Both of the method assessing disease burden(VHI-10), type and grade(determined by a fellowship trained laryngologist) are too subjective

Further study is needed to elucidate the impact of *H. pylori* infection on voice outcomes after treatment of Reinke's edema.

05 Summary

1. Prevalence/Severity: HP≈39%; **HP(+) → higher RE grade/type**.
2. Symptom paradox**: HP(+) lower VHI-10** despite worse visuals → likely stiffness/fibrosis.
3. Demographics: 19% male; men carry higher smoking exposure.
4. Literature: HP often detected in benign laryngeal disease; some benefit after eradication, but causality mixed and reflux may explain part.
5. Practice: In refractory RE (voice rest + smoking cessation no improvement), consider HP testing (prefer active tests).
6. Limits & next steps : Small n, IgG-based, single rater, no LPR metrics → need larger, objective, pre/post eradication studies.

Thank you!!!

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