Gastropharyngeal and Gastroesophageal Reflux in Globus and Hoarseness

Conrad F. Smit, MD; Justin A. M. J. van Leeuwen, MD; Lisbeth M. H. Mathus-Vliegen, MD, PhD; Pieter P. Devriese, MD, PhD; Astrid Semin, RN, MS; Joep Tan, MD, PhD; Paul F. Schouwenburg, MD, PhD

Background: The role of gastropharyngeal reflux in patients with globus pharyngeus and hoarseness remains unclear.

Objective: To evaluate patients with complaints of globus, hoarseness, or globus and hoarseness combined for the presence of gastropharyngeal reflux and gastroesophageal reflux.

Design: Prospective clinical cohort study of 3 groups of patients undergoing ambulatory 24-hour double-probe pH monitoring. In patients with pathologic gastroesophageal reflux, an upper gastrointestinal endoscopy was also performed.

Setting: Tertiary care, outpatient clinic.

Patients: Twenty-seven patients with globus alone, 20 patients with hoarseness alone, and 25 patients with globus and hoarseness combined.

Results: Patients with well-defined pathologic reflux (ie, gastroesophageal reflux with or without gastropharyngeal reflux) were present mainly in the group of patients with globus combined with hoarseness: 18 (72%) of 25 patients, compared with 7 (35%) of 20 patients with hoarseness alone and 8 (30%) of 27 with globus alone. Seven (10%) of all 72 patients had prolonged acid exposure at the laryngopharyngeal junction in the presence of a normal gastroesophageal pH registration. Abnormal findings in the esophagus were found at endoscopy in 17 (65%) of 26 patients with pathologic gastroesophageal reflux (with or without gastropharyngeal reflux).

Conclusions: We found a high prevalence of pathologic reflux in patients with both globus and hoarseness. Based on these findings, we strongly advise upper gastrointestinal endoscopy for symptomatic otolaryngological patients with pathologic gastroesophageal reflux.

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PATIENTS AND METHODS

PATIENTS

From April 1, 1994, through July 31, 1998, patients presenting with complaints of globus, hoarseness, or both were invited to participate in the study. They underwent otolaryngological examination and barium swallow videofluoroscopy of the upper aerodigestive tract to exclude concomitant disease. Only patients with normal findings at routine otolaryngological examination (ie, flexible endoscopy of the larynx) were included in the study. Exclusion criteria consisted of abnormal benign lesions (eg, posterior laryngitis, edema, polyps, cysts) and mass lesions. Subtle abnormalities suggestive of reflux, including thickening of the posterior larynx and the presence of erythema or mucus strands, were only rarely present. The patients completed a more detailed questionnaire on esophageal and otolaryngological symptoms, such as heartburn, regurgitation, dysphagia, hoarseness, coughing, and difficulties with swallowing, and on their smoking habits and alcohol intake.

Based on their complaints at presentation, clinical history, and answers to the questionnaire, we divided patients into the following 3 groups: globus only, hoarseness only, and globus and hoarseness combined. Hoarseness was self-reported by the patients as a “rough” voice or vocal fatigue and was not objectified.

The ethical committee of the Academic Medical Center, Amsterdam, the Netherlands, approved the study, and informed consent was obtained from all patients.

METHODS

Double-probe pH monitoring was performed with 2 monocrystalline antimony pH sensors positioned along a single catheter (diameter, 2.1 mm), with the sensors 15 cm apart and a silver–silver chloride cutaneous reference electrode (Digitrapper Mark III; Medtronic Synectics, Maastricht, the Netherlands). Both probes (pH sensors) were calibrated simultaneously in buffer solutions of pH 7 and pH 1 before monitoring. A flexible laryngoscope was introduced transnasally until a good view of the hypopharynx was obtained. The proximal probe was placed in the UES during endoscopy to ensure that the proximal probe was surrounded by esophageal mucosa. The distal probe was positioned 15 cm distal to the proximal probe, well above the lower esophageal sphincter.

The patients were encouraged to eat their regular meals without any restriction and to maintain their normal daily and nocturnal routines. The patients reported their body positions, meals, and drinks in a diary.

The criteria of Richter et al.18 were used for the distal probe, to distinguish between physiologic and pathologic GER. Thus, a pH below 4 less than 3.5% of the total time, less than 8.2% of the time in the upright position, and less than 3% of the time in the supine position was defined as having no pathologic reflux.24

For the proximal probe placed at the entrance of the esophagus, recently established18 reference values for GPR were used that are based on 20 healthy subjects (14 men and 6 women; mean age, 32.9 years; range, 19–57 years) with hardly any period of pH less than 4 found at the level of the UES. Thus, a pH below 4 for more than 0.1% of the total time, more than 0.2% of the time in the upright position, and more than 0% of the time in the supine position, or the occurrence of more than 3 reflux episodes of pH below 4 were considered to have pathologic reflux.18

To assess GPR, it is necessary to perform dual-probe pH monitoring with the proximal probe placed in the UES.18 A pH drop below 4, recorded by the proximal probe, is considered to be positive evidence for GPR only if it is preceded by a pH drop at the distal probe of similar or larger magnitude.5,13,18

Patients in whom pathologic GER was detected were referred for upper gastrointestinal endoscopy.

DATA ANALYSIS

We analyzed the proportions per group by means of descriptive statistics. Differences in overweight, heartburn, cough, belching, regurgitation, smoking, and alcohol and coffee use between the groups with and without pathologic reflux were analyzed by χ2 test or Fisher exact test as appropriate.
tected in one patient, and islands of Barrett mucosa below the UES were detected in another.

All 6 patients with globus and reflux esophagitis had pathologic GER and pathologic GPR. The patient with hoarseness alone and reflux esophagitis had pathologic GER only. The 8 patients with globus and hoarseness combined and reflux esophagitis at endoscopy had pathologic GER and GPR. The patient with Barrett esophagus had severe pathologic GER and GPR. The patient with islands of Barrett mucosa below the UES had borderline abnormal pH values at the UES and above the lower esophageal sphincter.

The characteristics of all patients with abnormal findings at endoscopy are shown in Table 5. Most of these patients had pathologic GPR in addition to pathologic GER. Although they had proven abnormalities in the esophagus, 7 patients (41%) did not complain about heartburn.

By the use of dual-probe pH monitoring, we found a high prevalence of pathologic GER in our patients with globus combined with hoarseness. Of the patients with globus only, we found pathologic GER (with or without GPR) in 30%, which is in agreement with the findings of Wilson et al (23%), Curran et al (38%), and Hill et al (30.8%). Of the patients with hoarseness only, we found

**COMMENT**

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pathologic GER (with or without GPR) in approximately one third of the patients.

Forty (56%) of 72 patients presenting with laryngological complaints (ie, globus, hoarseness, or globus and hoarseness combined) had pathologic reflux, disclosed by 24-hour pH monitoring. At present, this technique is the criterion standard for the assessment of reflux. The quantification of reflux with 24-hour pH monitoring, however, has its limitations because of day-to-day variability.10,20,21 Although patients were free to carry out their normal daily activities, reflux-promoting factors caused, for example, by certain activities or foods were not always present during the 24-hour monitoring period. Therefore, intermittent reflux episodes related to an occasional fatty or heavy meal may have been missed, resulting in a negative finding on a pH test in a symptomatic patient.

Patients with pathologic GER also underwent endoscopy of the esophagus. It appeared that 65% of the patients with pathologic GER had abnormal findings, mainly in the form of reflux esophagitis and twice as Barrett’s mucosa.

About 30 years ago, the suggestion was raised that GER could be an important factor in the cause of globus.2,3,4 Since the introduction of 24-hour pH monitoring, globus caused by GER seems less likely. The association of hoarseness and reflux is not as well investigated, and controversy remains as to the possible role of reflux herewith.5,8-11,13 We found, however, a high prevalence of reflux in patients with globus and hoarseness combined.

At present, there are at least 2 possible mechanisms to explain the association between reflux and laryngeal disease. One mechanism postulates a vagally mediated reflex from an acid-sensitive distal esophagus, provoking laryngeal complaints and epithelial lesions.1

The second describes a direct acid injury of the larynx and is supported by animal studies, showing that minute amounts of gastric fluids are capable of inducing damage to laryngeal structures.10,22 Therefore, the detection of GER and of GPR seems to be important in laryngological disorders.

Physiologic reflux is present in the esophagus, and its upper limit is considered to be 5.5% of the total time.19

The most important defense mechanisms against the corrosive action of acidic gastric juice are esophageal acid clearance, mucosal resistance, and salivary secretion.10,23 It may be that such a defense does not exist at the pharyngolaryngeal transition and that, because of the acid sensitivity, a small amount of acid reflux may have devastating effects. This might signify that nearly any acid reflux at the laryngopharyngeal transition has to be considered pathologic, and that reflux events at the lower esophageal sphincter defined as being physiologic may reach the UES and provoke symptoms and/or damage, which was shown in 7 of our patients with otolaryngological symptoms. Unfortunately, our small sample size did not allow for regression analysis, so we were unable to detect significant predicting variables with respect to reflux or the kind of reflux (GPR, GER, or GPR and GER).

In conclusion, for patients with a history of globus and hoarseness combined, the attention of the otolaryngologist should be directed toward the gastrointestinal tract. This is highlighted by our finding of GER in 46% of all patients and in 72% of patients with globus and hoarseness combined, and our finding of esophageal abnormalities in 65% of patients with pathologic GER or without GPR. A history of heartburn and belching was disappointingly low in frequency and did not make major help in detecting GER.

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Reprints: Conrad F. Smit, MD, Department of Otorhinolaryngology–Head and Neck Surgery, University Hospital Vrije Universiteit, PO Box 7057, 1007 MB Amsterdam, the Netherlands (e-mail: cf.smit@azvu.nl).

REFERENCES


