ABSTRACT

Laryngopharyngeal reflux (LPR) is one of the most common conditions seen in otolaryngology clinics [1] and up to 55% of patients who present with dysphonia [2]. This relationship has been hypothesized to be caused by a retrograde flow of gastric acid into the laryngopharynx and may be an important etiologic factor in inflammatory and neoplastic diseases of the upper aerodigestive tract. Failure to recognize LPR may lead to prolonged symptoms delayed on the correct diagnosis and management of the head and neck [3].

The diagnosis of LPR is difficult due to inconsistent symptoms and laryngeal findings, which often do not correlate with symptom severity. A novel technology, narrow band imaging (NBI), has increasingly been investigated for magnification of mucosal abnormalities in patients with LPR. The Olympus NBI optical technology has been used to identify mucosal changes [4].

Patients with LPR had a mean RSI score of 22.1 ± 5.9 (range 15-37), mean RFS score of 11.2 ± 2.3 (range 8-15), and mean NBI score of 3.2 ± 1.9 (range 2-13). On the other hand, normal controls had a mean RSI score of 5.8 ± 1.9 (range 2-13), and mean NBI score of 2.7 ± 1.2 (range 1-10). No patients incurred injuries (e.g., bleeding, perforation) from the NBI scope. Overall, RSI greater than 13 and RFS greater than 11 were significantly correlated. Higher RFS were associated with lacey and punctuate patterns, as well as increased number of laryngeal sites involved. The diagnosis of LPR was successfully made in 15 patients with LPR and an area suspicious for leukoplakia on the left vocal fold. Figure 5 demonstrates dense microvasculature patterns in Barrett’s esophagus using NBI with magnification. Patients and Methods

In a prospective case-control phase I pilot study of 15 patients with LPR and 17 normal controls, mucosal patterns were visualized in the larynx using NBI (Olympus Corp., Tokyo, Japan). The study was conducted at a tertiary referral center between July 2010 and August 2011. The protocol was approved by the Institutional Review Board at the University of Pennsylvania. A 9-item questionnaire was used to obtain the reflux symptom index (RSI) on all subjects who agreed to participate. Subsites were graded as 1 for one subsite and 2 for two or more subsites. The NBI grading was calculated with respect to findings in the literature [6].

DISCUSSION

Use of NBI to detect LPR may result in increased sensitivity and specificity. Early detection is advantageous because LPR is a treatable condition with reduced lifestyle modifications and neutralization of acidity with proton pump inhibitors. The NBI system is a novel optical technology that enhances the visibility of vessels and patterns of inflammation. NBI enables the recognition of mucosal microvascular patterns. Most recently, the Olympus NBI optical technology has received FDA approval for otolaryngologic applications. Currently, there is limited data on the incorporation of NBI technology in an otolaryngologic practice.

In this study laryngologists were able to alternate between conventional fiberoptic white-light endoscopy and NBI filter in a single passing of the scope. Visualization of the mucosa with NBI added less than 2 minutes to the standard exam time. The detection of post-LPR mucosal vascularity was successful, with a high correlation between the results of visualizations using NBI filter in a single passing of the scope. The diagnosis of LPR was successfully made in 15 patients with LPR and an area suspicious for leukoplakia on the left vocal fold. This pilot study has demonstrated various vascular and morphologic patterns on the mucosa visualized on NBI examination of patients with LPR. Preliminary results indicate that NBI may be a useful aid in the diagnosis of LPR and mucosal changes. Further studies with standardized methods of quantification of LPR changes and high-definition visualization are recommended.

CONCLUSIONS

This pilot study has demonstrated various vascular and morphologic findings on the mucosa visualized on NBI examination of patients with LPR. Preliminary results indicate that NBI may be a useful aid in the diagnosis of LPR and mucosal changes. Further studies with standardized methods of quantification of LPR changes are recommended.

REFERENCES