Diagnosis and consequences of gastroesophageal reflux in otolaryngology
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Chapter 8

Summary
SUMMARY

In this thesis diagnosis and consequences of gastroesophageal reflux in otolaryngology are investigated. Furthermore, gastropharyngeal reflux and gastroesophageal reflux are assessed in patients with otolaryngological complaints and disorders.

Chapter 1
A general introduction concerning acid gastric reflux and a review of the literature are given. Since ambulatory pH monitoring is the best method to assess acid gastric reflux, the introduction is focussed on this technique and especially on the problems of gastropharyngeal reflux monitoring. Studies using this technique to assess reflux are evaluated.

Chapter 2
An easy technique for the placement of the proximal probe to measure gastropharyngeal reflux with ambulatory 24-hour double-probe pH monitoring without the use of manometry is introduced. Furthermore, normal values for gastropharyngeal reflux were studied in healthy volunteers. Endoscopic placement of the proximal probe in the upper esophageal sphincter, without manometry, proved to be a reliable method for 24-hour pH monitoring, thus offering a simple cost-effective and patient friendly alternative to manometry. With this technique, hardly any acid exposure at the level of the upper esophageal sphincter was found in normal healthy subjects.

Chapter 3
To clarify the relationship between reflux and complaints of globus and hoarseness, gastropharyngeal and gastroesophageal reflux were evaluated in patients with complaints of globus, hoarseness and globus and hoarseness combined. Thirty-seven percent of the patients with globus, 45% of the patients with hoarseness and 84% of patients with the combination of globus and hoarseness had pathologic gastropharyngeal and/or gastroesophageal reflux. In 65% of the patients with pathologic gastroesophageal reflux abnormal mucosa in the esophagus was found during endoscopic examination. Therefore, endoscopic follow-up in patients with pathologic gastroesophageal reflux detected by 24-hour pH monitoring is advised.
Chapter 4
Most retrospective studies suggest that reflux is a common feature in patients with carcinoma of the upper aerodigestive tract and perhaps plays a role in the pathogenesis. If so, acid gastric juice should pass the upper esophageal sphincter and reach the larynx and pharynx to induce lesions leading to a carcinoma. In patients with laryngeal or pharyngeal squamous cell carcinoma, gastroesophageal and gastroesophageal reflux were studied with the ambulatory 24-hour double-probe pH monitoring technique, described in chapter 2. In addition, patients who had been irradiated in the head and neck area were also analyzed to study the effect of radiotherapy on reflux. Of all patients, only 17% had neither pathologic gastroesophageal nor gastroesophageal reflux (60% had a pathologic gastroesophageal reflux). The prevalence of pathologic gastroesophageal or gastroesophageal reflux in irradiated patients and untreated patients did not differ significantly. The results show that reflux is a common event in patients with head and neck cancer.

Chapter 5
Because reflux is a common event in head and neck cancer, laryngectomized patients could also have a high prevalence of reflux. However, little is known about gastroesophageal reflux and gastroesophageal reflux after laryngectomy. Therefore, gastroesophageal reflux and gastroesophageal reflux were studied in these patients. A high prevalence of reflux was found (64% pathologic gastroesophageal reflux, 82% pathologic gastroesophageal reflux). These results raised the question whether all laryngectomized patients should be investigated for reflux and in the presence of pathologic reflux findings should be treated with antireflux medication.

Chapter 6
In contrast to the monitoring of gastroesophageal reflux, where the occasional passage of acid meals and drinks have only a minimal impact on the overall data as they are included in the amount of physiologic reflux, pH changes at the proximal esophagus/hypopharynx region may have a considerable impact on the outcome of monitoring of gastroesophageal reflux. The virtual absence of physiologic reflux at this site may easily lead to false positive gastroesophageal reflux findings in case of ingestion of acid foods and drinks. Artifacts during pH monitoring are caused by intake of acid foods and beverages and/or by the monitoring circuit itself (pseudoreflex). These artifacts can be detected by careful analysis of the temporal relation of the pH tracings. For diagnosis of gastroesophageal reflux it is essential to correct the 24-hour pH data for all these
artifacts, which necessitates a manual review of the complete 24-hour data set. This manual review is time consuming and too cumbersome for daily practice. Dietary restrictions, to bypass these artifacts, interfere with the normal situation in daily life and detract from the ambulatory 24-hour registration at home. In an attempt to exclude most artifacts without a time consuming review of the 24-hour pH-data, the influence of food and beverages ingested during the monitoring period was studied. Furthermore, we investigated which of 3 methods namely: no correction (rough uncorrected data), exclusion of meal periods (intake corrected data), exclusion of meal periods and a 2 hour postprandial period (intake and postprandially corrected data) agreed most with the manually corrected (reviewed) data, the best available data at hand.

As to the diagnosis of gastropharyngeal reflux, the uncorrected pH tracings seemed severely biased by artifacts, caused by food intake and pseudoreflux. Manually corrected data agreed sufficiently with the data obtained by leaving out meals and beverages. Leaving out meal periods and a postprandial episode gave results between the rough data, the corrected data and the data obtained by the omission of meal periods. However, it also resulted in a loss of 8 hours of monitoring time.

Chapter 7
In this chapter the results obtained in this thesis are discussed.