

学 位 論 文 の 要 旨

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学 位 論 文 名 Oral Symptoms Including Dental Erosion in Gastroesophageal
Reflux Disease Are Associated With Decreased Salivary Flow
Volume and Swallowing Function

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論 文 内 容 の 要 旨

INTRODUCTION

One of the oral symptoms accompanied with gastroesophageal reflux disease (GERD) is dental erosion, which is caused by gastric acid reaching the oral cavity. Clearance of acid from the esophagus occurs in a two-step procedure, namely, primary peristalsis clearing and then neutralization of the acid by saliva for chemical clearance. Swallowing function also affects the volume of saliva in the esophagus and therefore plays an important contributory role in acid clearance. The clearance of acid by saliva and swallowing would thus be an important factor to consider in the etiology and development of oral symptoms such as dental erosion.

In this preliminary clinical study, we evaluated the association of salivary flow volume and swallowing function with oral symptoms in patients with GERD and healthy controls, testing the hypothesis that oral symptoms including dental erosion in GERD are

associated with impaired salivary flow volume or swallowing function.

MATERIALS AND METHODS

Participants were 40 GERD patients (21 men, 19 women; mean age, 68.8 years) and 30 healthy controls. Patients with GERD were consecutively selected from among outpatients of the Department of Internal Medicine, Shimane University Hospital between October 2008 and April 2011. Endoscopic study was performed in all the patients to detect the possible presence of mucosal breaks. They were then divided into two subgroups: the non-erosive reflux disease (NERD) group and the reflux esophagitis group (Los Angeles classification grade A–D) based on the endoscopy findings. The healthy controls were divided into two subgroups by age: the older (10 men, women; age range, 62–76 years) and the younger control group (10 men, 5 women; mean age, 28.9 years). All participants provided informed consent to participate following approval of the study protocol (18 Sep., 2008) by the Ethics Committee of Shimane University Hospital, Japan.

Detailed medical, dietary, and dental histories were obtained to identify individual behavioral habits potentially associated with dental erosion. Oral examination evaluated dental erosion and determined scores for the decayed, missing, filled (DMF) index, the papillary, marginal, attached (PMA) index for gingivitis, and the Simplified Oral Hygiene Index (OHI)-S. Salivary flow volume and swallowing function were evaluated by the Saxon test and repetitive saliva swallowing test (RSST), respectively.

Data were compared between the GERD and the two control groups using Kruskal-Wallis test, Spearman's rank correlation test and Mann-Whitney's U test. A p-value less than or equal to 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

DMF index and OHI-S scores differed significantly between all 3 groups. PMA index was significantly different between the GERD group and the two control groups. Prevalence of dental erosion was 24.3 % among the GERD group (0% in the control groups). No specific relationship was found between the incidence of dental erosion and dietary history or behavioral habits. The Saxon test results were significantly lower in the GERD group than in both the control groups. Frequency of swallowing was significantly lower and time to first swallow was significantly longer in the GERD group than in the two control groups.

Our findings that salivary flow volume and swallowing are impaired in patients with GERD would then support the notion that saliva plays an important role in tooth wear since GERD patients showed a poor buffering capacity of saliva in conjunction with a higher prevalence of dental erosion.

We recognize the limitation of the small control group, especially the age-matched one, in this preliminary clinical study and that statistical power may be influenced by this fact. We tried to offset this by providing a detailed analysis of the patients' history and findings and since our results are in line with our experience in our daily routine work, we believe that our results reflect the clinical reality in a Japanese population. Future larger prospective studies should seek to verify our preliminary results.

CONCLUSION

Oral symptoms particularly dental erosion, in GERD would likely be associated with impaired salivary flow volume or swallowing function. Treatment for oral dryness induced by reduced salivary flow volume and rehabilitation for swallowing function could be indicated in patients with GERD.