

Review Article

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Gastroesophageal reflux disease and dental erosion: A modern review

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Abstract

Gastroesophageal reflux disease (GERD) is a chronic condition well defined in the last 15 years. Its management increasingly involves different clinicians such as gastroenterologists and dentists, because of dental erosions attributable to extraesophageal symptoms. This review provides a summary of the oral consequences of GERD, despite the fact that dental erosion can occur every time an acid attacks enamel surfaces, even more so the right diagnosis is crucial and the cooperation between clinicians is advisable.

Keywords: Gastroesophageal reflux disease; dental erosion; tooth wear; enamel erosion; acid reflux.

Introduction

Fifteen years have passed since the Montreal Consensus Group, made up of international valuable gastroenterologists, defined and classified gastroesophageal reflux disease (GERD) [1]. GERD was distinguished as a complex situation occurring when the material contained into the stomach flows back in the upper tract producing several symptoms. This recent committee established a subclassification among esophageal and extraesophageal syndromes. Typical GERD symptoms are heartburn, acid reflux and retrosternal pain, while extraesophageal aspects include dental erosions, laryngitis, chronic cough, asthma and harsh voice. More rarely, it has been described also cases of chronic sinusitis related to this disease [2]. GERD entails an irritating stimulus for the

esophageal mucosa sustained over the time, which can lead to mucosal injury moreover reflux esophagitis, Barrett's esophagus, strictures and adenocarcinoma. The pharmacological management of this disorder involves proton-pump inhibitors (PPIs) as the first choice, despite several patients continue to experience troublesome symptoms with their intake [3]. GERD distribution in the population covers approximately all ages groups, indeed there are cases of this disease also in the pediatric age [4], this has a particular relevance because the enamel of deciduous teeth is less mineralized than the enamel of permanent elements, so when it is subjected to repeated acid offenses it develops greater injuries. Erosive tooth wear (ETW) has its cause in a not-bacterial chemical-mechanical process which damages hard tissues of teeth modifying the aspect of elements involved with hypersensitivity to

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hot/cold stimuli, unaesthetic consequences, pulp complications, phonetic changing, altered function and secondary occlusal discrepancies. ETW etiology is based on the presence of reflux, wrong behaviors such as vomiting for example in anorexia/bulimia and dietary habits such as recurrent consumption of soft drinks and strong acid foods. All these factors reduce oral pH and saliva is not always able to compensate for it, thus lesions occur. Recently it has been recognized as a cause also the professional exposure to acid liquid and vapors [5]. Softened enamel during ETW will result in being more vulnerable to mechanical stress, making the differential diagnosis with abrasion more difficult.

The aim of this study was to report a modern review about oral effects of acid reflux in order to bring attention on the multidisciplinary approach for GERD patients, by encouraging the simultaneous work between different medical teams.

Materials & methods

An electronic search was performed on PubMed considering the modern period of the last 5 years from 2015 to 2021, the following MeSH were used: “gastroesophageal reflux disease and dental erosion” “GERD and tooth wear”. Studies eligibility criteria are the description of ETW in adult and pediatric patients suffering from GERD, including exclusively systematic review in free full texts.

Results

The digital investigation has provided 28 articles, but only 2 were positive for inclusion criteria, while others were excluded for regarding oral microbiota shift, asthma, bariatric surgery and not systematic reviews. The valuable work of Lechien et al. [6] wants to analyze the potential relationship between reflux and dental disorders including dental erosion. Authors examined 18 papers which met their inclusion criteria for the combination of suspected or diagnosed GERD and ETW, in this sample the prevalence of enamel damage was present in an interval of 16% and 44% while in the healthy population it is <20%. The ETW localization was both in the upper and in the lower jaw, with a higher involvement of the palatal and lingual surfaces especially of the incisors. The other study examined is the significant article of Picos et al. [7] which involves 10 studies. The mean prevalence of hard tissue loss is 48.8% compared with 20.8% in non-GERD controls and this percentage is higher in the children population than the adults one. This work concludes a constant relation between GERD and ETW.

Discussion

Despite difficult ETW diagnosis, the association with GERD is frequently hypothesized in literature. However, the main finding of this review is the different methods used for diagnosing GERD. Furthermore, the prevalence of both gastric reflux and enamel loss are very variable according to the different geographic areas where studies are carried out. A constant of our investigation is that a lower oral pH related to acid reflux is a risk factor for dental erosion [8]. To the best of our knowledge, it seems very

important to include patients with a diagnosed GERD, but also who has only a suspect, in dental screening in order to prevent severe dental hard tissue damage. In the same way, dentists and oral hygienists who treat patients with ETW have to dedicate a meticulous anamnesis to these patients and suggest a specialistic gastroenterologic examination where recommended.

Nowadays the increasing number of GERD cases represent a real health issue. This fact influences also dental practitioners because of the higher incidence of dentin hypersensitivity, dental morphological damages and phonetic implications [9]. A widespread knowledge about the connection of these pathologies would be desirable to provide a prompt therapy both in the oral cavity and in the digestive tract.

Conclusion

The heterogeneity between studies makes the association between GERD and ETW difficult, limiting a clear univocal conclusion. However, acid reflux from the gastric environment causes a salivary pH fall which represents an indisputable risk factor for enamel erosion. Dental examination should be recommended for diagnosed and suspected GERD patients.

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