Saliva and dental erosion

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ABSTRACT

Dental erosion is a multifactorial condition. The consideration of chemical, biological and behavioral factors is fundamental for its prevention and therapy. Among the biological factors, saliva is one of the most important parameters in the protection against erosive wear. Objective: This review discusses the role of salivary factors on the development of dental erosion. Material and Methods: A search was undertaken on MEDLINE website for papers from 1969 to 2010. The keywords used in the research were "saliva", "acquired pellicle", "salivary flow", "salivary buffering capacity" and "dental erosion". Inclusion of studies, data extraction and quality assessment were undertaken independently and in duplicate by two members of the review team. Disagreements were solved by discussion and consensus or by a third party. Results: Several characteristics and properties of saliva play an important role in dental erosion. Salivary clearance gradually eliminates the acids through swallowing and saliva presents buffering capacity causing neutralization and buffering of dietary acids. Salivary flow allows dilution of the acids. In addition, saliva is supersaturated with respect to tooth mineral, providing calcium, phosphate and fluoride necessary for remineralization after an erosive challenge. Furthermore, many proteins present in saliva and acquired pellicle play an important role in dental erosion. Conclusions: Saliva is the most important biological factor affecting the progression of dental erosion. Knowledge of its components and properties involved in this protective role can drive the development of preventive measures targeting to enhance its known beneficial effects.

Key words: Dental erosion. Enamel. Dentin. Saliva.

INTRODUCTION

Dental erosion is defined as the loss of dental hard tissue by a chemical process that does not involve bacteria[87]. The continuous erosion process occurs in different stages. Initially, softening of enamel surface occurs and this process can vary according to the immersion time and the type of acids involved. If the erosive challenge persists, dissolution of consecutive layers of enamel crystals takes place, leading to a permanent loss of volume with a softened layer on top of the remaining tissue[69]. Dental erosion can have extrinsic or intrinsic causes. The intrinsic causes comprise recurrent vomiting as in patients suffering from anorexia and bulimia, cytostatic drug treatment or propulsion of gastric contents into the mouth due to gastroesophageal reflux. Extrinsic causes comprise frequent consumption of acidic foods or drinks, the use of acidic hygiene products and acidic medicines. such as effervescent vitamin C or aspirin. Alcohol has been also associated with erosion. Gaseous acids or chemicals breathed during work may also cause erosion[78].

In enamel, the lesion primarily develops in the prism sheath areas, followed by dissolution of prism cores. Eventually, the interprismatic areas are also affected. Bulk mineral is centripetally etched away in enamel erosion leaving a partly demineralized softened surface layer, which is prone to mineral deposits after topical fluoride application[18]. In dentin, erosive demineralization results in the exposure of an outer layer of fully demineralized organic matrix followed by a partly demineralized