Toothpaste-Induced Oral Mucosal Desquamation

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PRECÍS

Several cases of oral mucosal desquamation were recently noticed. We report the histological assessment of the lesions, suggesting the etiological role of a specific toothpaste.

DISCUSSION

Oral mucosal desquamation is a common scenario in a number of pathologic conditions,[1] such as chemical and electrical burns, allergic reactions, hormonal disorders, and mucocutaneous alterations.[2] There are, to the authors' knowledge, only a few studies describing specific oral care products as a cause of mucosal desquamative lesions.[3–5] Eleven patients presented to our observation between September 2015 and February 2016, showing mucosal alterations of the oral vestibule, consisting of whitish-grey areas with detachment of a thin epithelial layer. These lesions were asymptomatic, and the underlying tissue appeared unaltered (Fig. 1). Every examined patient reported the use of the same toothpaste, recently put on the market (AZ Pro-Expert; Procter & Gamble, Cincinnati, Ohio). Samples of desquamated mucosa were retrieved from each patient with a gentle brushing action, and histological analysis was performed. The constant histological finding was represented by an alteration in the maturation process of the epithelium. The samples harvested were composed by desquamated keratinocytes, characterized by hypodysmaturation. Parakeratosis is a well-defined condition, showing the incomplete maturation of epidermal keratinocytes and an abnormal retention of nuclei in the stratum corneum, which appears thin and ready to exfoliate. Conversely, the pattern observed here indicates a stimulus to maturation hindering the complete growing phase, bringing anisocoric shapes of voluminous cells with big irregular nuclei (Fig. 2). Unfortunately, in the histological analysis, the underlying tissue conditions could not be examined because of the harvesting technique (full-thickness biopsies were not performed because they were not indicated both from clinical and ethical point of view). Furthermore, discontinuing the use of the aforementioned toothpaste resulted in rapid healing, with restitutio ad integrum, for all the patients.

During the 1990s, a "dentifrice reaction" was identified after the use of toothpastes containing sanguinaria[3]; more recently, the acronym "TIME" (toothpaste-induced mucosal etching) was assigned to specific lesions, characterized by strong cellular edema, comparable with a chemical/physical insult.[5] Although some evidence of mucosal alterations related to the use of oral care products is detectable in the unofficial literature, to date, no works clarify the etiological mechanism or pathophysiology of the lesions. Considering our cases, it must be noted that AZ Pro-Expert has a formulation with an extremely low water content (0.5%–1%) if compared with other toothpastes (30%–50%), to stabilize stannous fluoride in the compound. This feature could be a key to explain the uncommon mucosal response, more than a direct action of the stannous fluoride on the tissues. Hypersensitivity reaction could be reasonably excluded both for the lack of clinical signs on the underlying tissue and for the complete absence of eosinophils in the

Figure 1. Clinical appearance of a desquamated oral mucosa with an unmodified underlying tissue.

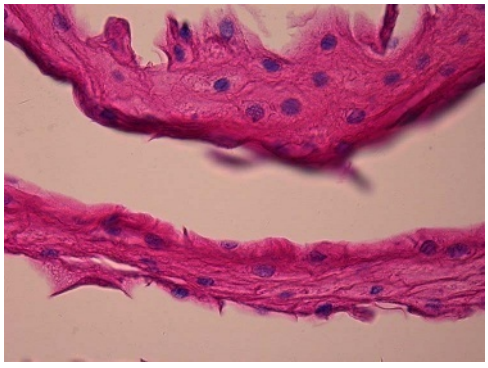

Figure 2. Histopathology of a desquamated epithelium showing large and irregular keratinocytes with nuclei of an increased size and anisocoric shapes (×40, hematoxylin-eosin stain).

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The authors have no funding or conflicts of interest to declare.

DOI: 10.1097/DER.0000000000000227

retrieved biopsies. Moreover, no new compounds are present in the toothpaste, potentially justifying an atopic reaction still not described. Finally, no other etiologic agents could be hypothesized because the cohort of patients was characterized by heterogeneous oral and systemic conditions.

This reaction can be considered, to date, reversible without any further effect. A histological examination of the deeper layers and an extended clinical analysis of the phenomenon could clarify the pathophysiology of the lesion.

ZEBRA

Idiopathic asymptomatic desquamation of the oral mucosa was associated with a specific toothpaste. Clinicians and users should be aware of this phenomenon.

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