

Nasal Mucosal Dysplasia Induced by Topical Corticosteroids with Benzalkonium Chloride

Sir,

A 28-year-old Caucasian male patient presented with a 2-year history of asymptomatic, crusted lesions on the nasal mucosa. The past medical history was remarkable for allergic rhinitis. He was treated with topical corticosteroids (mometasone furoate/beclomethasone dipropionate with benzalkonium chloride) twice daily for long periods of time. Dermatological examination revealed yellow-brown crusts and erosions on the nasal mucosa [Figure 1]. Furthermore, rhinoscopic examination revealed widespread white plaques on the nasal mucosa. Candidiasis, pemphigus, and leukoplakia were considered in the differential diagnosis. A mucosal biopsy was performed to reach a definitive diagnosis. Histopathological examination showed disorganized and atypical epithelial cells with hyperchromatic nuclei and eosinophilic cytoplasm and increased mitotic rate in the upper epidermal layers, intact basement membrane, and subepithelial lymphocytic infiltration [Figure 2]. The patient was advised not to use topical corticosteroids for rhinitis. He used isotonic saline solution for nasal irrigation. Nasal mucosal crusts were healed completely within 2 weeks. Close follow-up was recommended to evaluate mucosal dysplasia.



Figure 1: Crusts on the left nostril

Sinonasal epithelial malignancies are rare tumors and 10–20% of all cases are adenocarcinomas.^[1] Some external factors have been associated with an increased risk of nasal malignancies. Boysen *et al.* evaluated the nasal mucosal biopsies of a chemical company workers exposed to formaldehyde. Thirty-seven workers and 37 age-matched controls were included in the study. The volunteers had similar smoking habits and nasal diseases. Nasal mucosal hyperplasia was more common in the formaldehyde-exposed group. Therefore, the authors suggested that formaldehyde might play a role in the etiology of epithelial dysplasia.^[2] Furthermore, nickel has been considered to be responsible for squamous metaplasia. Boysen *et al.* showed an increased risk of nasal adenocarcinoma and squamous cell carcinoma in furniture workers.^[3] Air pollution has also been associated with dysplastic changes in nasal mucosa.^[4] Rhinitis can be treated with topical corticosteroids. Topical nasal corticosteroids are considered harmless, however, some spray forms include benzalkonium chloride as a protective agent. Benzalkonium chloride has been implicated in the development of toxic changes in the respiratory mucosa. Berg *et al.* evaluated the effect of benzalkonium chloride on the nasal mucosa of rats. They applied corticosteroids with and without benzalkonium chloride to the nostrils twice daily for 21 days. Biopsy specimens of the nasal mucosa exposed to steroids containing benzalkonium chloride revealed squamous cell metaplasia. However, biopsy specimens of the nasal mucosa exposed to steroids without benzalkonium chloride did not show degenerative alterations.^[5] Our patient had similar histopathological characteristics. However, a complete clinical response

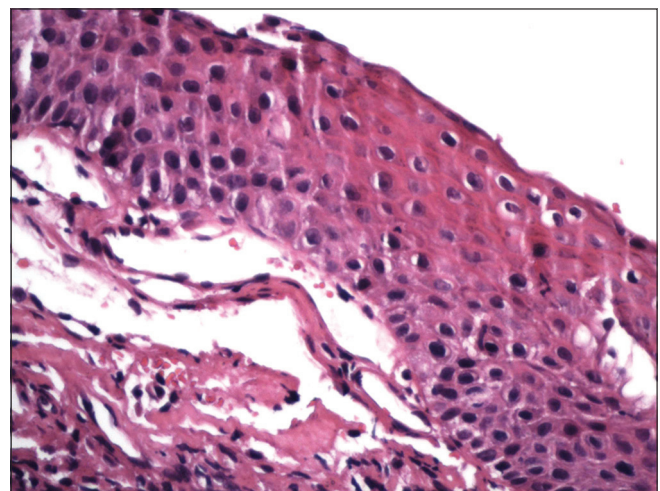


Figure 2: Atypical epithelial cells with hyperchromatic nuclei and eosinophilic cytoplasm (H and E, $\times 200$)

has been achieved by interrupting topical corticosteroid therapy.

The patient we presented had no known risk factors for nasal mucosal dysplasia. However, he had used nasal steroid (mometasone furoate, beclomethasone dipropionate) sprays with benzalkonium chloride for the last 2 years. Therefore, we suggest that long-term use of intranasal corticosteroids with benzalkonium chloride can lead to high-grade dysplasia in the nasal mucosa. We present an unusual case of nasal mucosal dysplasia in an otherwise healthy young man to emphasize the possible side effects of benzalkonium chloride in the upper respiratory tract.

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Conflicts of interest

There are no conflicts of interest.

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