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Case Report

An Unusual Oral Lichenoid Reaction to Potassium Alum: A Case Report and a Review of the Literature

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Abstract

Background: Potash alum mouth rinse has been well studied with appreciable success in protection against carious lesions and periodontal microbiota with no adverse reactions. While oral lichenoid reactions have been documented as complications of various dental materials and drugs none has been reported as a result of alum use. ***Case Description***: An unusual oral lichenoid reaction to potash alum use in an adult patient who presented at the oral medicine and diagnosis clinic of the dental centre of the Lagos State University Teaching Hospital. He presented with complaints of excessive salivary flow and dark pigmentation of the palate, and a history of potash alum licking for more than a month. On examination a dark pigmentation involving the palatal gingiva related to 24-27, sialometry revealed normal salivary flow Hence a diagnosis of false sialorrhoea was made. The patient was referred to the Periodontology unit of the same institution where an excisional biopsy was carried out, this was diagnosed as a lichenoid reaction by the Oral Pathology unit. The patient was counselled to stop the use of alum and reassured about the normal salivary flow. The patient reported tremendous improvement on review. ***Conclusion***: Many home remedy habits and practices can be harmful, this underscores the role of counseling patients against these unverified remedies.

Keywords: Potash, Sialorrhoea, Sialometry, Alum, Lichenoid, Reaction, Biopsy.

INTRODUCTION

Lichenoid reactions are Lichen planus-like lesions that uncommonly appear on the skin and mucosae as adverse effect drug reactions [1, 2]. Systemic medications cause oral lichenoid reactions, the most commonly implicated are antidiabetic drugs, anti-hypertensives, nonsteroidal anti-inflammatory drugs, antimalarialsals, and antifungals [1-5]. It may also result from direct contact with oral medications, metallic dental restorations, acrylates, composites resins, glass ionomer cement, cinnamates, flavourings, and other chemical substances1. The prevalence and pathogenesis of oral lichenoid drug reaction is controversial6. Oral lichenoid lesions (OLLs) are histologically and clinically similar to oral lichen planus (OLP) and it can be very challenging to distinguish oral lichenoid reactions (OLDRs) from oral lichen planus (OLP) which is immune-mediated [2], the histology similar to oral lichen planus is defined by marked epithelial acanthosis and elongated rete ridges with a mixture of perivascular inflammation and inflammatory cell infiltrates, some pieces of evidence suggest that neutrophils, eosinophils, and plasma cells are noted in the deeper layers in drug-induced lesions with increased apoptotic keratinocytes [7, 8]. Clinically oral lichenoid reactions vary from painless, white, or pigmented (in blacks) reticular striae to painful erythematous and erosive lesions (2), it usually appears as a solitary lesion unlike oral lichen planus and is uncommon in children and the site of occurrence is atypical [9]. In most instances the lesions disappear on the removal of the irritant, this may be diagnostic [1].

An alum is an aluminium-based hydrated double sulfate salt with a monovalent cation which may

be potassium, sodium, or ammonium which determines the nomenclature [10]. Potassium alum, with the formula $KAl(SO_4)_2 \cdot 12H_2O$ is the most common. Sometimes the aluminium is replaced by chromium (III), or the sulfur is replaced by selenium, the commonest of these is chrome alum $KCr(SO_4)_2 \cdot 12H_2O$. (10). Papermaker's alum which is aluminium sulfate $Al_2(SO4)_3 \cdot nH_2O$ is used industrially for flocculation while aluminium hydroxide gel is used medically as a vaccine adjuvant [11]. Alum-containing mouthrinses have been reported to reduce caries incidence and periodontal diseases in several studies, they however reported no side effects [12-15].

This article is a report on a case of pigmented oral lichenoid reaction resulting from the topical use of Potassium alum in an adult Nigerian.

CASE REPORT

A 66-year-old Nigerian, a Yoruba Christian clergyman presented in the Oral diagnosis clinic of the dental centre of the Lagos State University Teaching Hospital Ikeja Lagos Nigeria with a complaint of excessive saliva/'oily' discharge in the upper left quadrant of a month duration in October 2020. He said the discharge seemed purulent initially and was more at night, there was no history of associated toothache, swelling, tooth mobility, trauma, gingival bleeding, or halitosis. There was however a positive history of tooth picking and the patient reported that at the advice of friends he started licking Alum supposedly to stop the excessive salivation.

There is a history of an uneventful tooth extraction, he is a known Hypertensive (uncontrolled) and he is not on any antihypertensive drugs, no history of any other underlying systemic disease and he is not on any routine medication.

On examination, oral hygiene was fair, there was a presence of a yellowish coating on the tongue and whitish thickened saliva around the left Stenson's duct. There was no soft tissue swelling, ulceration or colour change noted at this time. No carious lesion or restoration was noted but there was cervical abrasion on upper left premolars and attrition of all molars with gingival recession on the upper left and right first molars. The hospital anxiety and depression scale (HADS) assessment shows normal values D-6, A-5 [16].

A Provisional diagnosis of False Sialorrhea was made, this was proven with the result of the sialometry; unstimulated was 0.32ml/min and stimulated was 0.8ml/min. Periapical radiograph of the 25,26,27 revealed horizontal bone loss.

The patient was referred to the periodontology clinic where scaling and polishing and subgingival root planning were carried out. On review two months after the initial presentation, the patient claimed the saliva accumulation had reduced after the periodontal treatment, however, he insisted that the excessive secretion persists. Patches of irregular, dark hyperpigmentation was seen on the palatal ridge of the 24-27, a punch biopsy was performed but the result was inconclusive. He presented two months later, with similar but more widespread hyperpigmentation which has now involved the marginal gingivae (figure 1), and was scheduled for another biopsy after baseline investigations. Periodontology was invited and an excisional biopsy was performed (Figure 2) successfully and sent to the oral Pathology unit for histologic diagnosis. The report (Figure 4) reveals hyperplastic non-keratinized stratified squamous epithelium with underlying moderately collagenous fibrous connective tissue within which are multiple vascular channels. There are areas of hemorrhages and mild infiltration of chronic inflammatory cells within the focal areas of connective tissue papillae in the subepithelium. Inflammatory infiltrates are however absent in the deeper layers. A diagnosis of oral lichenoid reaction secondary to licking of Potash alum was made.

The surgical site healed satisfactorily (Figure 3), and the patient reported normal salivary flow afterward. The patient was counselled to maintain good oral hygiene and discontinue alum use or any other item for his gingivae. He was referred to the physicians for the management of the high blood pressure.

Figure 1

Figure 2

Figure 3

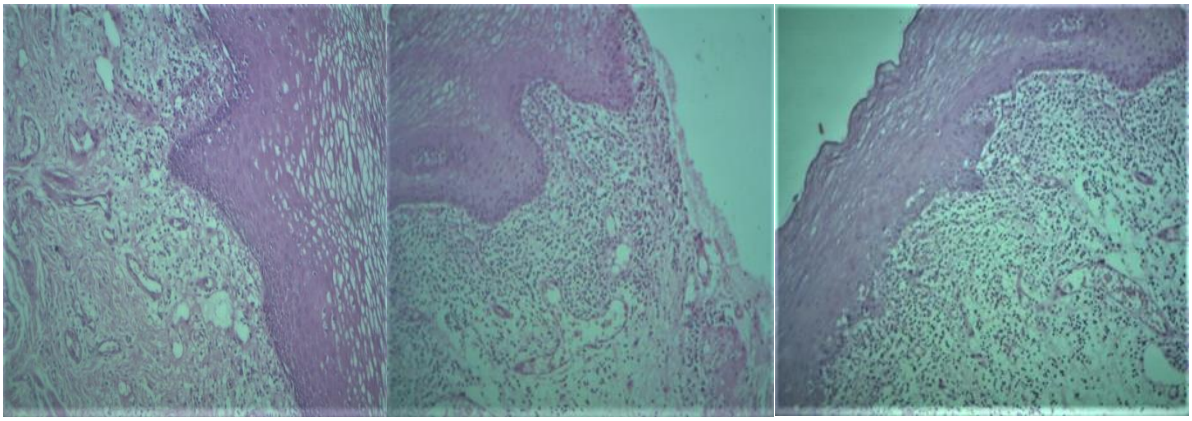

Figure 4: Sub-basal chronic inflammatory infiltration of the hyperplastic stratified squamous epithelium. Haematoxylin and Eosin staining x40 magnification

DISCUSSION

Oftentimes patients' complaint of excessive salivation is a result of intraoral saliva accumulation from swallowing difficulties which may be psychosomatic in origin, termed false sialorrhea. Home remedies by patients have variously been reported, a lot of which are medicinal plants and naturally occurring substances, some are however harmful. A Mexican study reported the use of herbal medicine by the Aztecs and Mayans in the management of oral/dental conditions, similar to another study in New Zealand where people use these despite inadequate scientific support for their applications in terms of the dose and the possible side effects [17, 18]. This explains the case of the patient in this report, the communal nature of the African society engenders a joint responsibility for the health of each one in the family or the community, this patient agreed to the use of alum by relations despite the fact that he is an elderly clergyman, with the belief that alternative therapy has no risk of allergic reactions or adverse effects because of the natural source.

Although lichenoid reactions commonly appear as white streaks, they may be pigmented in Blacks as it appeared in this case, pathogenesis is not very clear but it is thought to be a result of polymorphisms of the cytochrome P450 enzymes resulting in alteration in the metabolism of some substances in susceptible people1. Potash alum mouth rinse (0.02 M) use is not new in dentistry, anti-cariogenic effects was reported in children with drastic reduction in the plaque and salivary levels of oral Streptococcus (S. mutans, S. mitis, S. salivarius) [12-15]. It is reportedly been used for gingival retraction because of its astringent properties, it significantly reduced existing dental plaque in children who followed normal oral hygiene habits including tooth brushing for a period of 4 weeks [13]. No adverse effects to the oral hard or soft tissues were reported in these studies unlike in this case report, the lichenoid reaction in the case presented must have been dose-related unlike 0.02M in the studies reported this patient was not applying a solution, he sucked on the chunk of the aluminum salt for an extended period daily.

The histologic picture in this case is confirmatory and similar to literature [7, 8] with infiltration of the hyperplastic epithelium with sub-basal chronic inflammatory cells and classical rete ridges (Figure 4).

CONCLUSION

This case report draws to attention the several habits and home remedies sought by patients to alleviate their condition before seeing the medical personnel. These remedies are most times self-prescribed and many a time are borne out of the advice of relatives and friends as in the case described. The onus is on the practitioner to take a good history, examine the patient thoroughly, and carry out necessary investigations. Potentially hazardous consequences can be nipped early by counselling and motivation towards optimal health practices.

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