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Case Report

Allergic Contact Stomatitis from Composite Restoration

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Abstract

The human oral mucosa is subjected to many pathogens potentially causing a contact allergy such as dental materials, food and oral hygiene products. Nevertheless, oral contact pathologies are usually not observed because of the inherent resistance of the oral mucosa to irritants. We report a case of a 56-year-old male with allergic contact stomatitis to composite restoration presenting as erythema, ulceration and vesiculation of the upper labial mucosa. The current case is reported because of the rarity of such lesions and the paucity of information concerning them in the dental literature.

Keywords: Allergic Contact Stomatitis; Composite; Dental Materials; Oral Cavity

In the present paper, a case of allergic contact reaction caused by direct contact with composite restoration is reported, which underwent clinical remission after the removal of the composite resin restoration.

Case Report

A 56-year-old male patient reported to the Department of Preventive Dentistry, College of Dentistry, Sakaka, Jouf, KSA, with a chief complaint of slowly increasing painful lesion on the upper lip for 15 days. He gave a history of having recent dental treatment with composite restoration in the right maxillary canine 15 days ago in some private dental clinic. Within 24 hours after dental treatment, he reported to the same dental clinic with the complaint of burning sensation in his upper lips. He was advised an anaesthetic gel (benzocaine) to be applied locally over the upper labial mucosa for five days and the patient told that there was some relief in symptoms. But after 10 days, he noticed a small erythematous lesion involving the entire upper labial mucosa and started using the anaesthetic gel of his own without any dental consultation. This was soon followed by ulceration along with burning sensation and pain which rendered him to seek dental consultation. There was no history of allergy, systemic illnesses, medication or familial history of atopy.

Clinical examination

Extra-oral examination revealed no gross abnormality. An intraoral clinical examination revealed an erythematous base with ulceration and vesiculation of the entire upper labial mucosa along. The patient had an anterior composite restoration in his right maxillary canine (Figure 1). Based on history, clinical appearance and the proximity of composite restoration, a diagnosis of allergic contact stomatitis to composite restoration was made and the removal of the composite restoration was planned. However, aphthous stomatitis and pemphigus were considered in the differential diagnosis.

Treatment

The treatment rendered to the patient was the immediate removal of the composite restoration in the maxillary canine of the right side.

Follow-up

After 5 days, the patient reported to the department and there was a partial remission of the intraoral lesions. Besides, the pain and burning sensations of the patients disappeared completely after the replacement of composite restoration. The patient was advised to avoid future exposure to resin-based dental materials.

Figure 1: Mucosal erythema, ulceration and vesiculations.

Figure 2: 5 days following the replacement of the composite restoration, there was a significant remission of the lesion, although it has not completely disappeared.

Discussion

The oral cavity, including the lips, is constantly exposed to a large number of potentially irritating and sensitizing substances [1]. Allergic contact reaction (ACR) is a term describing the reaction caused by the contact of a substance with the oral mucosa that is mediated by immunological mechanisms [2]. The main etiological factors causing ACR in the mouth are dental materials, food and oral hygiene products [3]. The clinical manifestation of ACR in the oral cavity is broad as no single pathognomonic or specific clinical picture exists; the usual elementary lesions comprise of erythema, edema, desquamation, vesicle formation and ulceration, leukoplakia-like lesions, and lichenoid reactions [4].

The use of acrylics, resins, and polymer materials in restorative dentistry represent a major advance in dentistry that ushered in the era of esthetic dentistry and improved and expedited the delivery of dental care [5]. There has been extensive research done on biological reactions to amalgam, but reactions to other materials that substitute amalgam have not been examined to the same extent. For both patients and personnel, adequate information on possible hazards on amalgam replacing materials seems not sufficient [6].

Composite resins are safe to use and usually do not cause any untoward reactions [5]. Documented incidents of adverse reactions in patients caused by resin-based materials in dentistry are quite rare, despite their extensive use, but they do occasionally occur [7]. When allergy occurs it may be because of the following reasons [8];

1. **Constant exposure to water and saliva components like enzymes:** In the oral cavity, water from the saliva infiltrates the three-dimensional network of polymers by electrolysis and hydrolysis, causing a swelling of the network with increasing distance between the chains. This facilitates diffusion of free residual monomers and additives (e.g. initiators, stabilizers inhibitors etc.) from the polymer network into the oral cavity. Generally, Triethyleneglycol-dimetacrylate (TEGDMA) is found from polymerized composite, but also other substances such as Bisphenol-A-glycidyl-di methacrylate (Bis-GMA), urethane-di methyl acrylate (UDMA), ethylene glycol methacrylate (EGDMA) and formaldehyde, have been detected, in a smaller quantity. Also, it is shown that an un-polymerized oxygen-inhibited outer surface of the material causes greater degradation [8].
2. **Microorganisms in the oral cavity:** Biodegradation of resin-based materials due to microorganisms in the oral cavity may occur but are not sufficiently investigated.
3. **Mechanical stress from biting and chewing***:* Concerning the material's mechanical properties, the results of the biodegradation are reduced surface hardness and wear and fatigue resistance, adding to the amount of released substances. Leakage from these materials can be seen for a long time after polymerization.
4. **Varying temperature, pH and chemicals from the diet:** Are also expected to have an impact on biodegradation of dental materials. It has been proved that leakage of by-products in a high-acid environment (e.g. cariogenic

environment) is higher than for a neutral solution. Due to this, an improvement of oral hygiene could lead to less leakage of byproducts.

Although the quantities of the substances released are probably too small to cause systemic reactions, local skin or mucosal reactions may arise from direct contact with dental composites [9].

The present case demonstrates severe allergy contact reaction to composite restoration, thus alerting the practicing dentists that even the modern restorative materials can cause allergy.

Oral contact allergy predominantly affects middle-aged women, particularly 50-60 years old [10] with a wide clinical spectrum that varies from subjective difficulties such as burning, pain and dryness of the mucosa (burning mouth syndrome) to objective changes in the form of non-specific stomatitis and cheilitis with reddish, edematous mucosa, erosions and ulcers [11]. A more distinctive manifestation is lichenoid reactions usually localized on the buccal mucosa, tongue and lips [1]. The potential allergic reaction seen in oral cavity other than the allergic contact stomatitis includes medicamentous allergic stomatitis, fixed drug reaction, stomatitis (cheilitis) venenata, granulomatous stomatitis and cheilitis, geographic tongue and Reiter syndrome [10]. Many cases are reported in literature with varied presentation of contact stomatitis to composite restoration ranging from fissuring, peeling of the mucosa and bleeding spots [5], mild erythema, swelling of the lips and buccal mucosa associated with angular cheilitis [12], and chronic stomatitis [13]. In the present case, the patient was a 56-year-old male with severe clinical signs and symptoms of allergy to composite restoration.

Although not so frequent, oral contact allergy might be observed in the daily practice, causing non-rare diagnostic pitfalls. The personal medical history of the patient is helpful to perform a correct diagnosis, as a positive history for recent dental procedures. Also, the specific anatomic region of the oral mucosa can help the clinician in a correct diagnostic orientation [3].

In the treatment of patients with known hypersensitivity to dental materials, precautions to decrease direct exposure of unreacted monomers should be taken. Care shall be taken while handling the resin-based materials to minimize unnecessary direct exposure of highly reactive, un-polymerized materials, and lower the possibility of monomer leakage during the first days after restoration. Rubber-dam should be used regularly to prevent monomers from bonding and composite to come in contact with the oral mucosa. Other precautions include the use of suction to reduce vapor, correct light curing, placement of composite in several thin layers, and polishing of composite to remove the oxygen-inhibited layer at the surface [10].

In the treatment of patients with confirmed allergy to composite restoration, their avoidance and replacement with other materials are recommended [2].

Conclusion

Over the last few years, there is a rise in the number of patients with allergies from different materials. Therefore, the practising dentists should be aware of their occurrence, diagnosis and treatment. Also, the dental materials must satisfy strict biocompatibility specifications since they are intended for long-term use in the oral cavity.

Bibliography

1. Ditrichova D., *et al*. "Oral Lichenoid lesions and allergy to dental materials". Biomedical Papers of the Medical Faculty of the University Palacky 151.2 (2007): 333-339.

2. Syed M., *et al*. "Allergic reactions to dental materials- A systematic review". *JCDR - Journal of Clinical and Diagnostic Research* 9.10 (2015): ZE04-ZE09.

3. Minciullo PL., *et al*. "Unmet diagnostic needs in contact oral mucosal allergies". *Clinical and Molecular Allergy* 14 (2016): 10.

4. Tosti A., *et al*. "Contact and irritant stomatitis". *Seminars in Cutaneous Medicine and Surgery* 16 (1997): 314-319.

5. Johns DA., *et al*. "Allergic contact stomatitis from bisphenol-a-glycidyl dimethacrylate during application of composite restorations: A case report". *Indian Journal of Dental Research* 25 (2014): 266-268.

6. Tillberg A., *et al*. "Risks with dental materials". *Dental Material* 24.7 (2008): 940-943.

7. Fan PL and Meyer DM. "FDI report on adverse reactions to resin-based materials". *International Dental Journal (*2007): 579-512.

8. Nilsen L and Eidissen M. "Adverse Reactions to Dental Resin Based Materials". MSc thesis TROMSO University, (2011).

9. Tang AT., *et al*. "New filling materials--an occupational health hazard". *Annals of the Royal Australasian College of Dental Surgeons* 15 (2000): 102-105.

10. Bakula A., *et al*. "Contact allergy in the mouth: Diversity of clinical presentations and diagnosis of common allergens relevant to dental practice". *Acta Clinical Croat* 50 (2011): 553-561.

11. Budanur DT., *et al*. "Potential hazards due to food additives in oral hygiene products". *Journal of Istanbul University Faculty of Dentistry* 50 (2016): 61-69.

12. Stoeva I., *et al*. "Allergic contact stomatitis from bisphenol-A-glycidyldimethacrylate during application of composite restorations. A case report". *Journal of IMAB - Annual Proceeding* 2 (2008): 45-46.

13. Koch P. "Allergic contact stomatitis from BIS-GMA and epoxy resins in dental bonding agents". *Contact Dermatitis* 49.12 (2003): 104-105.

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