CASE REPORT

A rare case report of a patient with allergic reaction following use of a dental impression material

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Abstract

An allergic reaction to an extremely day-to-day dental procedure-like impression making is a nightmare to any practicing dentist. Presented here is a very rare report of a denture patient who developed allergy during a routine impression making procedure which is carried out during fabrication of dentures. The patient developed symptoms which subsided on administration of antihistamines. The patient has elicited similar response during his previous encounter with impression making during fabrication of his old denture, which was missed during history taking. After remission, the patient was kept under observation, and the treatment was completed in conventional manner. He was also asked to mention the allergic episode in his subsequent dental encounters.

Keywords: Allergy, dental impression material, eugenol allergy

Introduction

Eugenol has been widely used in dental products for many years. Eugenol was reported to be mixed with zinc oxide that forms zinc oxide eugenol (ZOE), which exhibits therapeutic properties. The use of ZOE impression paste as complete denture final impression material, is prevalent in a developing world, owing to its advantage of cost-effectiveness. Although symptoms of extreme intolerance due to its burning sensation are common, ZOE is considered safe. Allergy to eugenol from impression material is very rare and not reported commonly in literature. Very recently, a case study described the adverse reactions due to ZOE in a young child. It was in the form of a localized reaction in the form of contact stomatitis following exposure to ZOE cement. It is important that the public and the practitioner to be aware of the potential for hypersensitivity type of reactions using materials like these. This paper describes a rare allergic reaction developed by a patient who underwent a simple impression procedure using ZOE impression paste.

Case Report

A 50-year-old male patient underwent routine secondary impression procedure in the Department of Prosthodontics, Indira Gandhi Institute of Dental Sciences, Puducherry. The material used was slow setting ZOE (Densomix, Mixodent, New Delhi, India). Following the insertion of the tray, after 4 min before the material was set; the patient developed gagging sensation, which directed the operator’s attention to the mouth. The lip spontaneously enlarged to almost 16-20 mm and the swelling was diffuse in both lips extending to the columella and the base of the nose. Immediately, the patient was rushed to the attached medical college hospital casualty, where he was examined and diagnosed as allergic reaction. His vital signs were under normal limits. Intraorally, there were no signs of inflammation or erythema. Chlorpheniramine maleate 6 mg was administered, and the patient was kept under observation for 30 min in the casualty. The patient was later shifted to the dental block, and the swelling subsided gradually and completely after 2 h and 30 min. Photograph was made 1 h after the patient with informed consent, and he was reported stable. In the picture, his swelling is reported to be half the original size [Figure 1].

Follow-up of the patient was done for the next 1 week. No other relevant findings were observed. The patient was informed about the condition, in which he elicited the response and was asked to report these incident in the future dental procedures. The treatment was carried out subsequently using elastomeric impression material.

Discussion

Eugenol is the active ingredient present in the essential oil of cloves. Recent studies shows that eugenol is also present
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Edema of the upper lip following zinc-oxide eugenol exposure.

The reaction was very spontaneous and it happened seconds after the procedure, alarming the operating dentist. The first reaction was very severe and it happened seconds after the procedure, other than a regular day in a prosthodontic setting. The reaction was not due to the material overextension, nor which alarmed the operating dentist. The first reaction was very spontaneous and it happened seconds after the procedure, which alarmed the operating dentist. The first reaction was gagging, which was not due to the material overextension, nor

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as a major constituent in the essential oil obtained from some aromatic plants. Eugenol exhibits pharmacological effects on almost all systems in the body, and the clove essential oil is considered as an antimicrobial agent for oral infections. The liquid of eugenol is described as pale yellow, with a strong smell, and a burning taste. Eugenol is a para-substituted phenolic compound (4-allyl-2-methoxy phenol) and is also widely used in dentistry in cements, filling materials, endodontic sealers, dry socket dressings, periodontal dressings, mouth washes, and mouth rinses. The patient can also get exposure to eugenol when he uses clove oil for tooth ache.

In prosthodontics, it is one of the time-tested materials for secondary impression in completely edentulous patients receiving removable complete denture treatment. The material is not considered a carcinogen and mutagen and is considered safe by the Food and Drug Administration. There are studies pertaining to cytotoxicity of eugenol which can cause tissue effects from low-grade reactions to the severe allergic reactions. It can cause severe allergy in sensitized patients. In animal experiments administration of eugenol intravenous and respiratory route was found to cause hemorrhagic lung edema and tissue damage. Allergic reactions may be contact urticaria, gingivitis, stomatitis venenata, and allergic eczema of skin. Zinc oxide allergy was also reported following root canal treatment. In general, a severe allergic reaction may precipitate as edema of lips and the tongue and may proceed to epiglottis leading to respiratory distress. Such a severe reaction is not reported on exposure to eugenol, but the dentist should be prepared for the emergency. The patient’s history is very important, which should not be missed. A previous sensitization to eugenol can elicit severe reaction in subsequent exposure.

In this paper, the case presentation is a happening on any other regular day in a prosthodontic setting. The reaction was very spontaneous and it happened seconds after the procedure, which alarmed the operating dentist. The first reaction was gagging, which was not due to the material overextension, nor a hyperactive gag reflex of the patient. The second reaction was the rapidly progressive swelling, which increased to an alarming degree. The patient later reported that he remembers history of similar incident before when he underwent treatment with complete dentures.

The high solubility of eugenol makes it to leach out of the impression material rapidly and contact the mucosa in high concentrations. One other material which may be associated with contact stomatitis and allergy is colophony, which is a rosin and is usually seen in eugenol impression pastes, periodontal dressings, root canal sealer, and varnishes. Occupational contact with colophony and eugenol have been reported in the literature with reactions like contact eczema of the hand of the operator. In the reported case, strong positive correlation can be established only by rechallenging. However, due to ethical concerns, rechallenging was not carried out. Owing to disadvantages such as stickiness and burning sensation, elastomers have displaced ZOE impression paste to a great extent. Desirable physical and mechanical properties and cost-effectiveness of ZOE for impression making makes its use indispensable in developing countries.

**Conclusion**

In the background of the above discussion, it is concluded that the allergic reaction may be associated with ZOE impression paste. The patient’s previous dental experience also gives us the indication of the association. It is very important for the dentist to take a thorough history including allergy or any unpleasant experience underwent with such materials or procedures in medicine and dentistry.

**References**


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