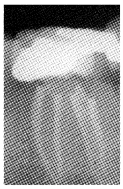

CASE REPORT

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Delayed type allergic reaction following the use of nonlatex rubber dam during endodontic treatment

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Abstract

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Aim To describe the development of a delayed type allergic reaction 24 h following the use of nonlatex rubber dam during endodontic treatment. The symptoms were alleviated with adequate medication; however, the patient rejected any further analysis.

Summary In recent years, allergic reactions because of latex rubber dam and gloves have received more attention. Nonlatex products are advocated in clinical use in cases where the patient presents an allergic background. Although rare, adverse reactions may be encountered even with these products. In this article, a very rare case is presented in which a patient developed signs of allergy 24 h after the utilization of nonlatex rubber dam and gloves during endodontic treatment. Signs including visible redness on the mucosa, submucosal oedema and desquamation in the vestibular mucosa were observed. With proper medication, the signs and symptoms were alleviated. Although the patient was referred to an allergy specialist for patch testing, she did not accept any further analysis.

Key learning points This case emphasizes the necessity of precautions during the management of latex-allergic patients in clinical practice. The unusual response encountered in this patient does not undermine the usefulness of nonlatex rubber dam and gloves in sensitive individuals.

Keywords: allergy, nonlatex, rubber-dam.

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Introduction

In recent years, there has been increasing emphasis on allergic reactions caused by rubber dams and surgical gloves (De Andrade *et al.* 2000). Adverse reactions ranging from mild

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contact dermatitis to life-threatening conditions have been attributed to the allergenic potential of latex. It has been stated that latex allergy is not only confined to gloves, but to articles of clothing, rubber dam material and other latex containing materials (Weesner 1997). Potential allergens include thiurams, sodium dimethyldithiocarbamade, zinc compounds and mercaptobenzothiazole (Fay *et al.* 1995). In cases where the patient reports an allergic background or presents atopic characteristics, nonlatex rubber dam and gloves are preferred to prevent possible risks. In spite of these measures, it is still possible to encounter adverse reactions. In this article, a rare case is presented in which a latex-allergic patient developed symptoms of allergy 24 h after the utilization of nonlatex rubber dam and gloves.

Case report

A 52-year-old female patient presented to our undergraduate clinic with symptoms of pulpitis in tooth 36. Clinical and radiographic findings revealed that root canal treatment was indicated. A careful medical history revealed that she had an allergic background. She indicated that she was allergic to various kinds of food including chocolate, eggs and strawberries. She also had known allergies to a number of drugs including Propanol® (Fresenius Kabi AB, Uppsala, Sweden), Nurcuron® (N.V. Organon, Oss, Holland) (vecuronium bromide) and Esmeron® (N.V. Organon, Oss, Holland) (recuronium bromide).

The patient also indicated that Citanest® with (octapressin) (Astra Zeneca, London, UK) was used as an anaesthetic solution in her previous dental treatments with no adverse effects; therefore, the same anaesthetic solution was used on this occasion. Meanwhile, considering the atopic characteristics of the patient, a nonlatex rubber dam (Flexi Dam, Coltene; Whaledent, Langenau, Germany) was utilized for the isolation of the tooth and the operating field. Routine root canal treatment was carried out whilst the operator was wearing nonlatex gloves. No symptoms were encountered during the course of treatment. Calcium hydroxide was applied as an intracanal medicament and a second appointment was scheduled 1 week later.

The patient returned the following day with symptoms of periapical oedema corresponding to the region of the tooth under treatment. The skin which had been in contact with the rubber dam was tense and rigid with marked erythema (Fig. 1). She had difficulty in opening her mouth and swallowing. There was evident oedema in the submental region; however, lymphadenopathy was not detected. Submucosal oedema and

Figure 1 Appearance of the patient's skin in contact with the rubber dam. An erythema is evident.

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Figure 2 Ulcerative lesions on the tongue which do not tend to pass beyond the midline.

desquamation were noted in the vestibular mucosa and ulcerative lesions were observed on the tongue, which did not tend to pass beyond the midline (Fig. 2). Intramuscular antihistamine (phenyramine hydrogen maleate, 45.5 mg 2 mL^{-1}, Avil®; Ilsan-Iltas, Istanbul, Turkey) and corticosteroid (dexamethasone 8 mg, Decort®; Deva, Istanbul, Turkey) were administered promptly and topical nitrofurazon (nitrofurazon, Furacin®; Novartis, Istanbul, Turkey) was prescribed for the skin lesions. The patient was referred to an allergy clinic for the identification of the definite source of the allergic reactions. Additionally, topical corticosteroid (Sicorten; Novartis, Istanbul, Turkey) to be used twice a day was prescribed at the allergy clinic. Consultation with the allergy specialist confirmed that this was a delayed Type IV allergic reaction and a patch test was recommended. However, the patient rejected any further analysis.

Suspecting that the rubber dam might be the cause, the case was reported to the manufacturer. They courteously replied immediately and added that they could collect all available information to decide if the case should be notified to their Competent Authority according to European law. They also provided a safety data sheet indicating that the material was composed of a nonlatex elastic plastomer and was nontoxic.

Discussion

Adverse reactions in patients following the utilization of latex rubber dams have been reported by a number of authors (Field *et al.* 1997, Kleier & Shibilski 1999, De Andrade *et al.* 2000, Kosti & Lambrianidis 2002). Weesner (1997) reported that there was little information in the literature on the extent of latex allergy amongst dental personnel. The author added that there was a need for the development of alternative protective products for dental surgeons, as elimination of barrier protection was not a viable alternative in infection control.

It has been stated that manufacturers have given consideration to the problem caused by natural rubber latex (NRL). Adverse reactions can be caused by materials used in the manufacturing process, including powder used to separate sheets of rubber dam during production and storage. Powder-free rubber dam has therefore been developed in which the powder is removed by repeated washing (Kunzelmann 2001). Ireland (1997) described an easy way of modifying a vinyl glove to be utilized as a dam in patients allergic to latex rubber.

Martin *et al.* (1997) analysed the protein content of 17 commonly used rubber dams and concluded that all contained significant amounts of protein. They added that the molecular

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weights of these proteins corresponded with those of known allergens and could therefore be a cause of hypersensitivity.

It is difficult to speculate about the adverse reaction in this particular case, where latex-free products were employed. However, the fact that the allergic reaction was detected only in those areas in contact with the dam substantiated the hypothesis that the main cause of this reaction was the dam material. Only formal testing could provide the answer. The utilization of nonlatex rubber dam was preferred taking into consideration the allergic background of the patient. The local anaesthetic agent utilized at the time contained no latex in its rubber bung and is an unlikely source of latex allergy.

Rubber dam is an indispensable element of endodontic care. This case emphasizes the need for a thorough medical history before treatment, appropriate precautions during treatment and the need for an emergency kit that contains corticosteroids, anti-histaminics, epinephrine and oxygen mask. Epinephrine can be injected subcutaneously or intravenously with great care when a type I reaction is encountered. Consultation with an allergy specialist could also be of value before treatment in nonemergency situations. However, this was not considered necessary as the patient had received multiple uneventful dental interventions previously. Another approach could be the placement of a napkin or gauze square beneath the dam to protect the facial skin from contact (Carotte 2001). However, this would not provide any intraoral protection.

Fortunately, this case was a delayed Type IV allergic reaction, which was readily alleviated by regular medication. Immediate reactions can lead to much more serious consequences and the practitioner must be aware of the possibility of allergy in clinical practice and take necessary precautions to provide a safe and effective management.

Conclusion

The possibility of allergic reactions even in unexpected cases should always be kept in mind by the practitioner during clinical practice and an emergency kit must be ready to perform appropriate first aid.

Disclaimer

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