



ORIGINAL RESEARCH PAPER

Dermatology

An unusual case of allergic contact dermatitis due to formocresol

KEY WORDS:

Dr. Saumya Pandey	Reader, Deptt of Prosthodontics, Purvanchal Institute of Dental Sciences, Gorakhpur.
Dr Amit Singh	Professor, Deptt of Prosthodontics, Purvanchal Institute of Dental Sciences, Gorakhpur.
Dr Naresh K Sharma	Professor, Oral & Maxillofacial Surgery, FODS, BHU, Varanasi.
Dr Jatin Gupta	MDS, Oral Medicine.
Dr Kanupriya	Senior Research Fellow, Oral Pathology, FODS, BHU, Varanasi.

ABSTRACT Formocresol is widely used in dentistry as an endodontic drug to neutralize the septic and necrotic of the root canals. It causes cellular degeneration and necrosis of the pulp. At times it presents unwanted situations for dentist like cellular degeneration, severe inflammatory reaction and allergic reaction. Hence, utmost care must be taken while using it. This article reports a case of contact allergic dermatitis from formaldehyde during root canal treatment.

INTRODUCTION

Formocresol that is commonly used in dentistry is actually a mixture, Buckley's Formocresol and contains m-cresol, p-cresol, formaldehyde and glycerin, is used for sterilization and disinfection of root canals⁽¹⁾. Formaldehyde (formalin, paraformaldehyde, trioxymethylene) is widely used in industries, cosmetics, as disinfectants, medications and root canal sealants^(2, 3). It is commonly used as an endodontic drug to neutralize the septic and necrotic contents of root canal⁽⁴⁾. It is toxic and causes cellular degeneration⁽⁵⁾. Despite the high frequency of root canal treatments with formaldehyde, very few cases of well documented allergy have been reported in the literature. These allergic reactions can be of varying severity ranging from local or focal reactions to life-threatening anaphylactic reactions. The present case reports contact allergic dermatitis from formaldehyde during root canal treatment.

CASE REPORT

A 13 year old female patient reported to our practice with multiple carious tooth and difficulty in chewing. Her 16, 17, 26, 27 and 47 were restored. Pulp degeneration was evident in 46 due to presence of sinus tract with respect to 46. She also complained of pain in mandibular left first molar. She was diagnosed with chronic irreversible pulpitis and root canal treatment was initiated as definitive treatment. Access opening and bio-mechanical preparation in the particular tooth was done where formocresol was used as devitalizer for remaining pulp tissue. She was given closed dressing with metapex as intra canal medicament. The patient reported after 24 hours with the complaints of pain and swelling in her left part of lower lip and erythema and denudation over a small area on left lower part of chin. Although no tenderness on percussion was elicited in the treated tooth, intra oral examination revealed desquamation with erythema of the left labial mucosa in relation to her left mandibular anterior region. Extra oral examination revealed swelling in her lower lip on the left side and scab formation on left side of chin.

TREATMENT

The treatment was initiated to relieve the symptoms of pain and swelling, minimize the signs of inflammation and to prevent further progress of infection. The patient was immediately advised to rinse her mouth with Betadine gargle to prevent superimposed infection. A steroid-based cream Turbocort-Triamcinolone 0.1 % w/w was applied over the ulcerated surface. Cetirizine tab was given as an antihistaminic to counter allergic reaction. SM Fibro one capsule in a day for one week was also prescribed which contains lycopene and other vitamins which play an important role

in repithelization and additionally act as an antioxidant, thus promoting healing. She was advised to avoid hot and spicy food and was kept on soft diet. The patient was recalled after first, after 3 days and subsequently after one week. On her subsequent visit, her condition was found to have visibly improved. The swelling, redness, and exfoliation of the mucosa had reduced. By her third visit, the condition had totally resolved and her root canal treatment was subsequently completed; the tooth was permanently restored with light cure material.

DISCUSSION

Formaldehyde is a common cause of allergic contact dermatitis⁽⁶⁾. It was reported that 40% -60% reactions were due to formaldehyde⁽⁷⁾. The patients allergic to formaldehyde are usually women who develop eczema on the hands or face^(8,9). In the dental literature 28 patients with immediate symptoms to formaldehyde containing root canal compounds have been described⁽¹⁰⁾. The characteristic features of formaldehyde allergy are anaphylactic reaction or shock and generalized urticaria^(10, 11). In dentistry, formaldehyde is used for its antibacterial activity, for devitalization of the tooth pulp and for its role in polycondensation of resorcine. Formaldehyde is one of the components of formocresol that interacts with cellular proteins. The addition of formaldehyde appears to potentiate the effect of formaldehyde on protein. In the present case patient suffered from the allergic reaction in those areas where the formocresol came in direct contact with the soft tissue. The possible cause could be due to the presence of formocresol in the latex gloves of clinician which when came in contact with the soft tissue gave the allergic symptoms. Patient was advised for Differential leucocyte count, which revealed higher eosinophil count (9%) suggesting it to be a Type I Hypersensitivity reaction. Patient was informed about it and was asked to disclose the fact to the other doctors and dentists in future, whenever undergoing any treatment. Betadine gargle® used in this study contains Povidine iodine, which is an antiseptic. It is a complex of iodine, which kills microorganisms such as bacteria, fungi, viruses, protozoa, and bacterial spores. Povidine iodine exerts its antiseptic effect by slowly releasing iodine. Povidine iodine gargle and mouthwashes are used to treat infections of the mouth as well as throat and mouth ulcers. Topical antihistamines and corticosteroid applications meant to soothe painful ulcers may be helpful; avoiding spicy or hot foods reduce the pain.

CONCLUSION

The oral cavity is constantly exposed to sensitizing substances that cause allergic reactions. Due to rise in number of patients with allergies from different materials, the practicing dentists should

be aware about the allergies documented to known materials and thus prevent allergic manifestations in the dental clinic.

REFERENCES

1. ADA: Accepted dental therapeutics, 40th ed , Chicago 1984.
2. Foussereau J. Guide de dermato-allergologie professionnelle. Paris: Masson, 1991.
3. Leroyer CH, Dewitte JD. Asthme au formaldéhyde. In: Bessot JC, Pauli G, editors. L'asthme professionnel. Paris: Margaux Orange, 1999: 353–363.
4. Wesley DJ, Marshall FJ, Rosen S: The quantitation of formocresol as a root canal medicament. *Oral Surg Oral Med Oral Pathol* 29:603-612, 1970.
5. Rolling I, Hasselgren G, Tronstad L. morphologic and enzyme histochemical observations of the pulp of primary molars³
6. Latorre N, Silvestre JF, Monteagudo AF. Allergic Contact Dermatitis Caused by Formaldehyde and Formaldehyde Releasers. *Actas Dermosiflogr*. 2011;102(2): 86–97.
7. De Groot A, White IR, Flyholm MA, Lensen G, Coenrads P-J. Formaldehyde releasers in cosmetics: relationship to formaldehyde contact allergy. Part 2 Patch test relationship to formaldehyde contact allergy, experimental provocation tests, amount of formaldehyde released, and assessment of risk to consumers allergic to formaldehyde. *Contact Dermatitis*. 2010;62:18-31
8. Cronin E. Formaldehyde is a significant allergen in women with hand eczema. *Contact Dermatitis*. 1991;25(5):276-82.
9. Agner T, Flyholm MA, Menné T. Formaldehyde allergy: A follow-up study. *Am J Contact Dermat*. 1999;10(1):12-17
10. Tas E, Pletscher M, Bircher AJ. IgE mediated urticaria from formaldehyde in a dental root canal compound. *J Invest Allergol Clin Immunol*. 2002;12(2):130-33
11. Kijima A, Nishino H, Umeda J, Kataoka Y. Type 1 allergy to formaldehyde in root canal sealant after dental treatment: two case reports and review of the literature. *Alerugi*. 2007;56(11):1397-402