RARE BUT REALITY OF METHYL METHACRYLATE IN DENTISTRY – A CASE STUDY

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ABSTRACT
Acrylic resins, based on methyl methacrylate are important to the dentist and dental lab technicians especially when dealing with Prosthodontic cases.

Objective: To study a case affected by allergic dermatitis.

Method: A post graduate student of Prosthodontics affected with allergic dermatitis was tested & diagnosed to find out the etiological cause by multidisciplinary approach.

Result: Methyl methacrylate was found to be the etiological factor.

Conclusion: As monomer is known to cause Delayed Hypersensitivity Type IV reactions, it can be a occupational hazard to dentist. Hence, timely diagnosis as reporting the allergic reactions to the clinician is a lucky opportunity to find the etiologic factor to eliminate it from working and the life environment.

Keywords: Methyl methacrylate (Monomer), Contact dermatitis, Prosthodontic, Delayed hypersensitivity.

INTRODUCTION
Since the 1930s, a variety of resins have been introduced into dental treatments for the construction of dental prostheses and their efficacy has been based on physical, chemical and biological properties. However, one of the major factors limiting the use of these materials is their biocompatibility.[1] In the last few decades, many substitutes for methyl methacrylate acrylic resin have been developed.[2] Nevertheless, they remain one of the most widely used materials in dentistry because of their low cost, ease of use and many applications.[3]

Case report
A 25years, female, 1st year post graduate of Prosthodontics noticed itching and burning in hands and fingers while doing her laboratory work. Later, she developed multiple eruptions, fissuring and oedema. On consultation and during detailing the past history, the dermatologist observed no such history of allergy during her under graduation.

On examination, dermatologist revealed moderate lichenification and hyperkeratosis of the palms and the fingers, pigmented macule with light-brown colour and clearly marked borders. On the palmer skin, several painful fissures with a depth of 2-2.5mm and marked erythematous lesions were observed (Photo 1). Anti histamines and antibiotics were prescribed in order to prevent infection and instructed to handle various materials by wearing gloves (vinyl gloves). There was a small but not constant effect by the prescribed treatment regimen & clinical signs and symptoms persisted (Photo 2). Hence, they advised to undergo various test to determine to which allergen the patient is allergic.

Investigations
A series of epicutaneous tests; patch test for the Indian standard battery antigen series allergens (Photo 3) along with different materials with which she was in daily contact (polymer, monomer, acrylic resin, latex gloves, vinyl gloves and separating medium - Photo 4) and intradermal test for atopic reaction was carried out. The dermatologist prescribed Prednisolone 30mg (Omnacortil) for 6 days in a tapering dose for the symptomatic relief to the patient.

Fig. 1: Moderate lichenification, hyperkeratosis & Fissures with marked erythematous lesions of the palms.

Fig. 2: Persisted symptoms after Antihistamine & Antibiotic therapy.
RESULTS
The patch test and intra dermal test was reviewed after 2 days and it revealed a very strong positive reaction to monomer.

TREATMENT MODALITIES
The dermatologist recommended to exclude every contact with the monomer and to use non latex gloves/vinyl gloves. They prescribed intense moisturising cream (Elovera cream) for every three hours and topical application of Halobetasol propionate & Fusidic acid cream (Halovate F cream) during night time till the lesions subsides. Patient was reviewed once in two weeks & prescribed the use of Immunomodulator Tacrolimus (Tacorus ointment) application for three months which was believed to reduce the recurrence of contact dermatitis. If the contact dermatitis recurs or if elimination of the cause was not practical, desensitization was recommended.

DISCUSSION
Dentists, handling acrylic resin materials and acrylic resin dentures are concerned with the sensitising and irritating properties of these materials. Often the physician, especially dermatologist or allergist, is appealed to for aid in determining the relationship of certain symptoms and signs appearing on the skin or oral mucosa which have come in contact with acrylic resin. Allergy is a hypersensitive condition which is the result of exposure to a particular allergen. Re-exposure to allergen demonstrates an altered capacity of the tissue to react. Allergic reactions fall in two main categories-immediate and delayed. Acrylic resin response usually falls in delayed type reaction. The patient was advised to undergo the Desensitisation process. The patient was advised to undergo the Desensitisation process. The patient was advised to undergo the Desensitisation process.

Table 1: Patch & Intra dermal test series for epicutaneous screening.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Epidermal allergens</th>
<th>Patch test result at 48th h.</th>
<th>Intra dermal test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Polymer</td>
<td>-</td>
<td>negative</td>
</tr>
<tr>
<td>2</td>
<td>Monomer</td>
<td>++</td>
<td>Positive</td>
</tr>
<tr>
<td>3</td>
<td>Acrylic resin</td>
<td>-</td>
<td>negative</td>
</tr>
<tr>
<td>4</td>
<td>Latex gloves</td>
<td>-</td>
<td>negative</td>
</tr>
<tr>
<td>5</td>
<td>Separating medium</td>
<td>-</td>
<td>negative</td>
</tr>
<tr>
<td>6</td>
<td>Vinyl gloves</td>
<td>negative</td>
<td>negative</td>
</tr>
</tbody>
</table>

An allergic reaction to monomer is not so rare in the dental practice. Hence, awareness of these reactions is important to the dentist especially while dealing with acrylic resins when a patient’s and practitioners general health is concerned.

REFERENCES