Contact allergic stomatitis in orthodontics

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ABSTRACT

Contact allergic stomatitis is an inflammatory reaction of the oral mucosa by contact with irritants or allergens. During orthodontic treatment this can occur due to corrosion of orthodontic appliances and subsequent nickel release, Latex in gloves or rubber band etc. This article reviews the clinical features, diagnosis and management of allergy in orthodontics practice.

Key Words: Contact Dermatitis; Allergy; Orthodontics

Contact allergic stomatitis (ACD) in dentistry affect patients and is a hypersensitive reaction that occurs when antigens of low molecular weight penetrate the skin or mucosa of susceptible individuals. Contact allergic stomatitis in orthodontics may result from contact with different materials used intraorally and sometimes extra orally during orthodontic treatment. This article reviews the clinical features, diagnosis and management of allergy in orthodontics practice.

The main etiological factors for allergic contact stomatitis in orthodontic patients are, a) Latex allergy (latex used in gloves, Latex present in elastic ties that hold the arch wires and latex in Orthodontic elastics), b) Nickel allergy (Nickel present in orthodontic brackets, Nickel-Titanium arch wires, extra oral headgear appliance), c) Chromium and Cobalt (release of Chromium and Cobalt from orthodontic brackets and wires), d) Chemical Catalysts (leach out from orthodontic bonding materials or cold curing acrylics -BISGMA-Bisphenol), e) Certain oral hygiene products given during Orthodontic treatment may result from contact with dental materials or cold curing acrylics -BIS-GMA. Bisphenol-a-glycidyl dimethacrylate (bis-GMA) is a frequently used monomer in dental composite resins. bisphenol-a-glycidyl dimethacrylate (bis-GMA) is found in a variety of dental bonding systems. It is produced by the reaction of methyl methacrylate and diglycidyl ether of bisphenol A (epoxy resin). In spite of the widespread use of BIS-GMA, intraoral reactions are not common. In a study of Goon et al only two of 1322 dental patients showed positive patch test reactions to BIS-GMA.

Nickel is a metal that has a great potential to create sensitivity reaction and is well understood as an allergen as stated in the result of a study performed by Luciane. Nickel is used in orthodontics for its excellent properties of shape-memory super elasticity, combining ability with titanium and resistance to corrosion. Nickel induces a contact allergic reaction which is Type IV delayed hypersensitivity immune response. There are two phases in this response: a) Sensitization phase - occurs the moment Nickel enters the body, b) Elicitation phase- occurs when the body is re-exposed to Nickel a second time which causes the appearance of complete clinical manifestation.

Hypersensitivity type IV is also referred to as a slow hypersensitivity because it occurs 24 to 48 hours after the body contacts the antigen or allergen. This reaction is also often called a cellular type reaction because this type can only be moved passively with sensitive lymphocytes or its extract in the form of transfer factor and not via serum or antibody. This reaction is triggered because the sensitized lymphocytes react specifically with certain antigen leading to immune reactions with lymphocyte and monocyte (macrophage) infiltration manifestation and causing tissue in duration in the area.

There are two types of mechanism, afferent and efferent. The afferent mechanism is a specific mechanism that is found when the lymphocyte cells with sensitized specific receptors react to certain allergen and release lymphokine mediators. Then, this agent will work specifically in the efferent mechanism by affecting lymphocytes, monocytes and macrophages that will cause tissue damage.

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Contact stomatitis may result from contact with dental ma-
tials, oral hygiene products, or foods. Common causes of contact oral reactions are cinnamon or peppermint which are frequently used as flavoring agents in food, candy, and chewing gum, as well as oral hygiene products such as toothpaste, mouthwash and dental floss.13

Incidence of contact stomatitis in dental and orthodontic treatment is believed to be significantly less because, a) Saliva quickly dilutes potential antigens and digests them before they could enter the oral mucosa, b)extensive vascularity of the oral mucosa rapidly removes the potential allergens before an allergic reaction takes place, c) less keratin content of the oral mucosa decreases the possibility of hapten formation.13

Signs and symptoms of contact allergic stomatitis in Orthodontics are non-specific and the reaction occurs only at the site of contact. These could be burning sensation or soreness at the site of contact, oral ulcers, swelling of lips and gingiva, inflammation of peri-oral skin, mild erythema in gingiva and buccal mucosa, clinical and histological lichenoid lesions, plasma cell gingivitis with edema and erythema of attached gingiva occasionally with chelitis and glossitis and burning sensation without one or more of these lesions is not a result of contact allergic stomatitis.

The diagnosis is based on a careful history taking about previous allergic response after wearing metal or rubber items on skin or previous allergies to any Dental restorations, b) appearance of allergic symptoms after insertion of Orthodontic components in the oral cavity, c) patch test: A small amount of allergens (Brackets, wires etc.) applied to the skin with the help of bandage for a period of sometime. The Dermatologist them measures the intensity of the skin reaction. A positive score ranges from +1, +2, +3, and +4 for most severe reactions.

The main differential diagnosis is herpetic stomatitis, candidiasis and ulcers due to mechanical irritation. It is managed as follows, in mild cases removal of allergens is sufficient to subside the symptoms, discontinue latex elastomeric and these should be substituted by either Vinyl or Nitrile, use Nickel free, Cobalt free, Brackets and arch wires (use Ceramic Brackets, Polycarbonate Brackets, Titanium Brackets and arch wires, Stainless steel arch wires, Gold plated Brackets and arch wires). In more severe cases application of topical corticosteroid, oral use of anti-allergic and anti-inflammatory drugs and mouthwashes. If the patient experiences positive patch test reaction during orthodontic treatment, it is recommended that all intraoral and extra oral appliances be removed until adverse symptoms subside and then treatment can be resumed by Nickel free appliances.

In conclusion awareness of reactions that can occur with the various dental materials in treatment is important to the orthodontist. These materials can produce type IV hypersensitivity reactions. Diagnosis and treatment should include a multidisciplinary team. In all instances, the patient’s well-being should guide treatment decisions, and general health not just oral health should be the goal.

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Source of Support: Nil
Conflict of Interest: None Declared