Allergic Contact Dermatitis Associated With the Use of Facemask on a Patient With a History of Atopy

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ABSTRACT

Allergic contact dermatitis (ACD) is a skin inflammation caused by an allergic reaction after contact with small external substances capable of being absorbed by the skin. There are several studies describing allergic reactions to intraoral orthodontic appliances, especially those containing nickel. Allergic reactions due to extraoral appliances are not as frequent, and there are relatively few studies about them. Extraoral eactions are attributed to metallic, elastic, or textile parts of the extraoral appliances. This article's purpose was to report the appearance of an allergic contact dermatitis reaction in a 9-year, 2-month-old female patient, with a history of atopic dermatitis, after an orthodontic facemask was fitted. Rapid maxillary expansion was also performed with a Hyrax appliance while a facemask was used. Early diagnosis of this pathology is essential in order to achieve a total regression of the reaction. Orthodontists should be aware that ACD can be caused by facemasks in predisposed patients.

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The frequency of allergic reactions among orthodontic patients is difficult to assess. Some findings claim that approximately 1% of the patient population exhibits some kind of adverse reaction.[1,2] These usually include irritation and hypersensitivity, resulting in extraoral manifestations, such as dermatitis of the face and neck and intraoral reactions. Most are of moderate severity, and treatment can be continued.[1]

There are several studies describing allergic reactions, particularly to nickel,[3-5] due to intraoral orthodontic appliances. Nickel is a common component in many orthodontic materials. An allergic reaction to nickel is commonly found in the general population. This allergy has increased with the more frequent use of jewellery and intraoral piercings containing nickel.[5] Nickel is a common environmental allergen, with approximately 10% of the female and 1% of the male population reacting sensitively.[5-7]

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Allergic reactions due to extraoral appliances are not as frequent, and there are relatively few studies on them. Extraoral reactions are attributed to metallic, elastic, or textile parts of the extraoral appliances.[8] The irritant component of such reactions may be explained by friction between skin and the orthodontic appliance facilitated by sweat or saliva.[9-12]

CASE DESCRIPTION

A 9-year, 2-month-old female patient with a Class III malocclusion and anterior crossbite presented to a private orthodontic office in Valencia, Spain, for treatment. Her medical and dental records were noncontributory (at first, a topic dermatitis was not recorded).

Cephalometric analysis showed a skeletal Class III relationship (ANB angle=-1°; SNA angle=80°; SNB angle=81°) and normal lower facial height (Figure 1a). The aims of treatment were to: (1) obtain a skeletal Class I relationship by correcting the molar relationship, (2) obtain ideal overjet and overbite; and (3) improve her facial aesthetics. Initially, we addressed the skeletal problem by performing rapid maxillary expansion using a Hyrax appliance while a Petit orthopaedic facemask was fitted (Figure 1b). The force applied was 14 oz per side. The direction of the elastics was approximately 30° below

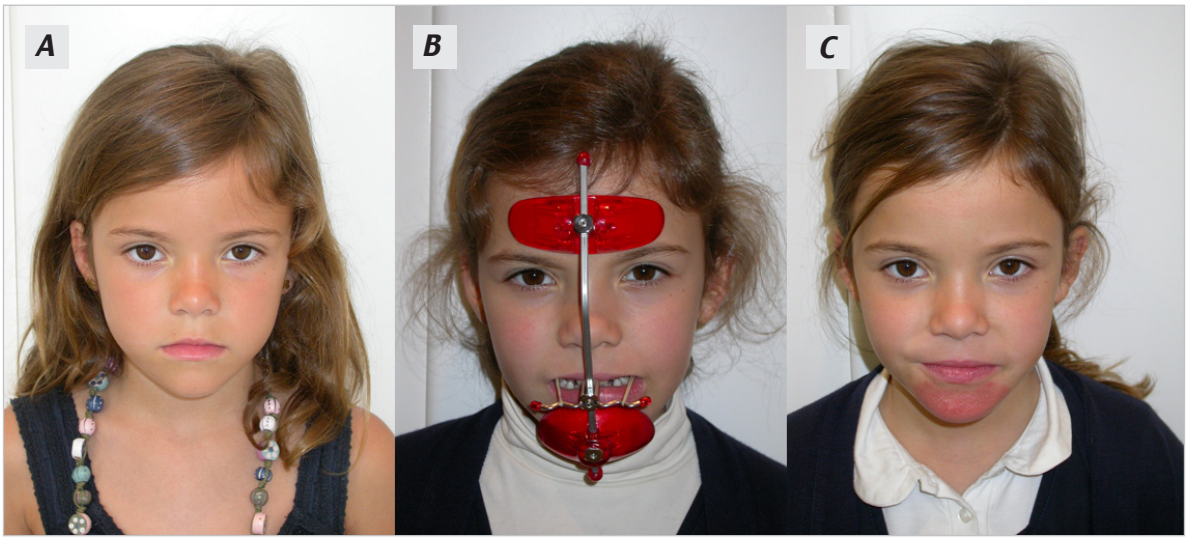

Figure 1. (A) Initial photograph of the patient's face. (B) Petit facemask fitted on the patient. (C) Allergic contact dermatitis reaction on the patient's chin due to use of a facemask.

the occlusal plane. The patient was asked to wear the facemask for 12 to 14 hours a day in the evening and overnight. The Petit facemask has 2 supports: one at the forehead and one at the chin.

The lesions of allergic contact dermatitis (**ACD**) appeared at the points of contact with the facemask within a week of wearing the orthodontic appliance. The lesion was an itchy, blistering, red rash limited to the chin area (Figure 1c). One week after wearing the orthodontic appliance, the patient was seen by a dermatologist, who prescribed cortisone pomade as a local treatment. The use of the facemask was discontinued at this time. Treatment was effective, and the lesions disappeared within 2 weeks.

At the end of this 2-week period, it was decided that the patient should wear the facemask on alternate days with regular use of the cortisone pomade. This decision was taken in consultation with the dermatologist, although there was little improvement in the ACD.

During the orthodontic treatment, the patient suffered new outbreaks of ACD. The cortisone pomade was again administered and the facemask removed, although only temporarily as it is the sole alternative for correcting the problem of the skeletal Class III relationship.

DISCUSSION

Allergic reactions are quite frequent, as was seen in a study carried out by orthodontists in Finland and Norway. Forty-six percent of those orthodontists had reported at least 1 adverse patient reaction over the previous 5 years.[4]

Despite the worldwide use of facemasks and the possible implication of extraoral appliances in the development of ACD, no clinical reports were found in the literature.[9-12] All the studies described allergic reactions to headgear but not facemasks. The irritant component of such reactions may be explained by friction between skin and parts of the orthodontic appliances.[1] One of the factors favoring the development of ACD is humidity plus high temperatures, which provokes sweating in the support area of the facemask with the chin. Furthermore, the patient being prone to atopic dermatitis was another ACD predisposing factor.

This case history demonstrates the importance of specific questioning, particularly related to sensitivity and previous allergic reactions when compiling medical records, especially with female patients. This assessment is also supported by other authors in the literature.[5,6]

In conclusion, appliances containing nickel should not be used at all by nickel-hypersensitive patients. Dermatologists need to be aware of the allergenic materials used in orthodontics to correctly manage skin disease in this high-risk group. Also, it is essential that an early diagnosis of this pathology is made to obtain total regression of the allergic reaction. Orthodontists should be aware that ACD in predisposed patients can be caused by facemasks.

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