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Corrosion Of Metals Used In Orthodontic Treatment

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Side effects caused by metals used for therapeutic purposes in the human body have been known for a long time. These metals can cause toxic or allergic reactions in the human body. Allergies are directly related to the immune system. Allergies may be characterized by local or general allergic manifestations in the human body. Today, allergic reactions caused by metals is a very important problem that is not overemphasized in modern orthodontics, does not occupy the agenda much, but will require more attention in the future. In this presentation titled "Corrosion of Metals Used in Orthodontic Treatment", it is aimed to examine and evaluate all these conditions in detail.

Allergic reactions are triggered as a result of the release of metal ions to the environment following the corrosion of the relevant metal or alloy. Allergy, in the most general terms, is the reaction of the body's immune system to chemical agents. Depending on the metal or alloy used for therapeutic purposes, different levels of allergic reactions may occur in the individual. In such cases, it is mentioned that genetic factors may also be effective. In addition to these, carcinogenic, mutagenic and cytotoxic effects of metals or alloys have also been reported in studies. The body's responses to allergic reactions may occur as early or late type. In clinical studies by researchers, significant changes in the ion levels of metals in tissue fluids have been detected after the use of metals or alloys in orthodontic treatments. For this reason, metals or alloys should not be considered biologically inert. However, when the body's contact with the metal or alloy is cut off, the tissues heal and recover.

As a result, when taking anamnesis from individuals who will receive fixed mechanical orthodontic treatment, it should be asked in detail whether they have metal allergy or any substance or any kind of allergy. If there is a suspicious situation, an allergy test should be requested. The allergic condition that occurs during the treatment should be carefully evaluated and necessary measures should be taken quickly.

Recent Publications

1. Karadede Berşan; "Prospective Investigation of NLR4 Inflammasome Pathway Gene Expression Levels in Patients Using Orthodontic Fixed Mechanics", Supervisor: Veli İ, Berdeli AH, İzmir Katip Çelebi University, Institute of Health Sciences, Department of Orthodontics, 2021, İzmir, Türkiye.
2. Toms AP. The corrosion of orthodontic wire. Eur J Orthod 1988; 10(2):87-97.
3. Canna SW, de Jesus AA, Gouni S, et al. An activating NLR4 inflammasome mutation causes auto inflammation with recurrent macrophage activation syndrome. Nat Genet 2014; 46: 1140–6.

Biography

Berşan Karadede, graduated from the Faculty of Dentistry in 2016 with her thesis named "Maxillofacial Surgery Techniques and Complications". In 2021, she received her PhD in orthodontics by conducting a multidisciplinary thesis named "Prospective Investigation of NLR4 Inflammasome Pathway Gene Expression Levels in Patients Using Orthodontic Fixed Mechanics". She started her second doctorate in the field of "Health Law" in 2021. She made clinical observations in Germany in 2017, 2021 and in Spain in 2022. She has been an invited speaker, organizer and participant in many scientific organizations. She has many international and national publications, book chapter authorship and refereeing. She gave lectures at İzmir Katip Çelebi University between 2019-2021.

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