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Metals used in Orthodontics and their side effects

Berşan Karadede
Ozel Ortodonti Agız ve Diş Sagligi Polikinigi, Turkey

The side effects of metals used in the human body have been known for a long time. Metals can cause toxic or allergic reactions. These types of allergies are related to the immune system. This may occur with local or general allergic findings. This is a very important problem that is not overemphasized in contemporary orthodontics, but will require more attention and attention in the future. In this presentation, it is aimed to review and evaluate this situation in detail.

In order for these results to occur, it is necessary to release metal ions to the environment with the corrosion of the relevant metal or alloy. Allergy is the immune system's reaction to chemicals. Depending on the metal or alloy used, different levels of allergy may occur. In this case, it is mentioned that genetic factors may also be effective. In addition, carcinogenic, mutagenic and cytotoxic effects of metals or alloys have been reported. Reactions that occur as a result of allergies can occur as early or late type. In clinical studies, significant changes were detected in the ion levels of metals in tissue fluids after the use of metals / alloys used in orthodontics. Therefore, metals or alloys should not be considered biologically inert. However, once the body's contact with the metal is cut off, the tissues heal.

As a result, before starting orthodontic treatment, when taking anamnesis from individuals who will receive orthodontic treatment with fixed mechanics, it should be questioned very well whether they have metal allergy or allergy to any substance or food. In doubtful cases, an allergy test should be performed. The allergic condition that occurs during the treatment should be evaluated meticulously and the necessary action should be taken quickly.

Recent publications

1. Karadede Berşan; “Prospective Investigation of NLRC4 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. Baran İ, Nalçacı R. Dişhekimliğinde kullanılan materyaller ve alerjik reaksiyonlar. Atatürk Üniv. DişHek. Fak. Derg. Suppl.: 2, 2007: 26-32.
3. Spalj S, Zrinski MM, Spalj VT. In-vitro assesment of oxidative stress generated by orthodontic archwires. Am J Orthod Dentofacial Orthop 2012; 141:583-9.

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 NLRC4 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 2022 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 received a Certificate of Honor in 2009, 2010 and 2016. She gave lectures at Izmir Katip Celebi University between 2019-2021. She has been involved in many social and cultural projects and she has 5 prizes from them.

dr.bersankaradede@gmail.com