

Analysis of metal elementary in gingivae with sever periodontitis by Particle Induced X-ray Emission

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Abstract

Although it is suggested that a certain metal for the dental treatment affects gingiva and oral mucosa, it is overlooked in many cases when clinical symptom is not discovered. Analysis of the metallic elements relating with a living body is tried about many tissues including blood, but there is no detailed report about gingiva. This study was performed to examine the metallic element in gingiva of periodontal patient by the PIXE method. 30 periodontal patients (male: 15, female 15, mean age: 55.8 years old) were used for this study. After checking the number of residual teeth and metal restoration teeth, the quantitative analysis was carried out using the gingival specimens taken out at the periodontal surgery. The number of residual teeth per one patient and metal restoration teeth were 23.9 and 12.7 respectively. About 30 kinds of metallic elements were detected per specimen. When searched about the main 19 main kinds this time, 5 kinds chromium, iron, nickel, copper and zinc were detected in all specimens, and it was detected by 60% or more of the specimen except for gallium and selenium. Moreover, as a result of quantitative analysis it was mostly detected in the order of copper, silver, aluminium, iron, palladium, zinc, gold, titanium, mercury, nickel and lead. From this examination, many kinds of metallic elements are detected in the gingiva, and the relation with inflammation and allergy was highly guessed.