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DNA damage and metallic ion content in patients with dental implants

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The aim of this study was to assess the potential genotoxicity of dental implants, evaluating biomarkers of DNA damage (micronuclei and/or nuclear buds), cytokinetic defects (binucleated cells) and the presence of trace metals in gingival cells of patients with implants, comparing these with a control group. A total of 60 healthy adults (30 patients with dental implants and 30 control patients without) were included in the study. Medical and dental histories were made for each including life-style factors. Genotoxicity effects were assessed by micronucleus assays in the gingival epithelial cells of each patient; 1,000 epithelial cells were analyzed, evaluating the frequency of micronucleated cells and other nuclear anomalies. The concentration of metals (Al^{27} , Ag^{107} , Co^{59} , Cr^{52} , Cu^{63} , Fe^{56} , Sn^{118} , Mn^{55} , Mo^{92} , Ni^{60} , Pb^{208} , Ti^{47}) were assayed by means of coupled plasma-mass spectrophotometry (ICP-MS). The frequency of micronuclei in the patient group with implants was higher than in the control group but without statistically significant differences ($P \geq 0.05$). Similar results were found for binucleated cells and nuclear buds ($P \geq 0.05$). For metals assayed by ICP-MS, significant differences were found for Ti^{47} ($P < 0.045$). Univariate analysis identified a significant association between the presence of micronuclei and age. Dental implants do not induce DNA damage in gingival cells, the slight effects observed cannot be indicated as biologically relevant

Biography

Parra Perez is an associate professor of oral medicine, school of medicine and Dentistry, University of Murcia, Spain. Experience in Oral Surgery and Implant Dentistry. Defended his phd Tesis at the University of Murcia in 2014. Graduated at the University of Murcia 2006. Master in Oral Medicine, Oral Surgery and Implantology at the University of Santiago de Compostela (2009-2012). Researcher of Oral Medicine

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