TITLE:
Proceedings from the 14th Multinational Congress on Microscopy, September 15–20, 2019, Belgrade, Serbia

PUBLISHERS:
University of Belgrade, Institute for Biological Research “Siniša Stanković”, National Institute of Republic of Serbia
Serbian Society for Microscopy, Serbia

FOR PUBLISHERS:
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ISBN 978-86-80335-11-7

PRINT:
Knjigoveznica i kartonaža Grbović M. Milica, M. Gorkog 43, Beograd 11000, Serbia
30 e-copies

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Alteration in buccal mucosal cells due to the effect of smoking cigarette and periodontitis by assessing genetic and histopathologic damage

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Among the factors that cause changes in oral mucosa are bacterial, fungal, viral infections, physical, thermal factors, immune system changes, systemic diseases such as diabetes, neoplasms, radiotherapy, chemotherapy, some drugs and chemicals [1]. It is also known that chronic habits such as alcohol and smoking cause precancerous and cancerous lesions [2]. Cigarette that causes DNA damage and increases the risk of oral cancer is an important risk factor for oral diseases such as periodontal disease [3]. The aim of the study is to evaluate histological changes such as to the frequency of micronucleus, nuclear buds, binucleated, pycnotic and karyolytic cells in buccal swabs of the individuals that smoking cigarettes at different time/amounts and periodontitis. In this study, adult patients who had no systemic diseases who were admitted to Istanbul Medipol University Faculty of Dentistry, Department of Esenler Hospital were included. Our study was divided into five groups (n:10). Group 1. Non-smoker+healthy gingiva, group 2. Severe smoker+periodontitis, group 3. Non-smoker+ periodontitis, group 4. Heavy smoker+non-periodontitis, group 5. Mild smoker+non-periodontitis. Exfoliative cytology was performed with the aid of cytobrush to collect the material from either the lateral side of the tongue or mouth floor. After the cytological smears, the samples were immediately fixed with methanol fixative. For cytogenetic analysis, Feulgen reaction was applied to all oral smear samples. Quantitative determination of micronucleus index and analysis of cytogenetic damage were scored [4]. All tests were performed using SPSS and p <0.05 was considered statistically significant. The highest histopathological damage score was observed in group 2. Overall, genetic damage frequency was significantly greater in grup 2 than other groups. In the literature, there is a large gap about the time and amount of cigarette consumption and histological damage. This study, filling this gap in the literature, evaluated the histological changes of smoking cigarette and periodontitis on oral smear samples. The results of our study showed that premalignant and malignant lesions were seen in oral smear obtained from individuals with heavy smoking and periodontitis. This study, thus, shows that smoking and periodontitis may cause alterations in the oral mucosal cells, their synergistic effect cause even more severe mutagenic changes at cellular levels, which may increase frequency of chromosomal damage.

References