

The Effects of Panoramic Radiography on Gingival Crevicular Fluid Volume and Micronucleus in Wistar Rats (*Rattus Novergicus*) with Periodontitis

Didit Aspriyanto, Bayu Indra Sukmana, Huldani, Aminuddin Prahatama Putra

Abstract

Panoramic radiography is a radiographic diagnostic tool that affects the Reactive Oxygen Species and causes oxidative stress, which has a role in DNA damage that occurs due to periodontitis or panoramic radiographic radiation exposure is characterized by the formation of micronuclei in gingival epithelial cells. Panoramic radiography exposure and periodontitis can increase the Gingival Crevicular Fluid (GCF) flow because of increased vascular permeability. The present study aims to determine the effect of panoramic radiography on the volume of GCF and micronuclei in Wistar rats with periodontitis. This study was true experimental with post-test only and control group design, used 40 male Wistar rats. The average number of GCF in the healthy rats' group that was not exposed to panoramic radiography was 0.114 μL , the periodontitis rats group that was not exposed, once, twice, and three times exposed to panoramic radiography were 0.246, 0.286, 0.294, and 0.374 μL , respectively. The result of the One-Way Annova test and Post Hoc Bonferroni test indicated that significant changes in the number of micronuclei were seen between the normal group with once exposure to the periodontitis group with two times and three times exposure and in the periodontitis group without exposure to the periodontitis group with two times and three times exposure. Panoramic radiograph X-ray radiation causes an increase in the volume of GCF and changes the number of micronuclei in Wistar rats with periodontitis.

Keywords: panoramic radiography, Gingival Crevicular Fluid, micronucleus, periodontiti.