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The Effect of Fixed Restoration Materials on the IL-1 β Content of Gingival Crevicular Fluid

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Abstract: Cast alloys used in dentistry come into close and prolonged contact with the gingiva and the oral mucosa, and certain alloys have been claimed to cause inflammation of gingival and periodontal tissues. However, only little information is available on the molecules mediating the mechanism of such an effect. For this reason, the aims of this study were to determine IL-1 β levels in the gingival crevicular fluid (GCF) before and after the placement of base, high-noble metal-ceramic and all-ceramic crowns. Thirty patients requiring an artificial crown for a maxillary second premolar were suitable for the present study; 18 were male and 12 female and their mean age was 24.3 years. Six months prior to participating in the study, all patients were free of systemic disorders, did not take any drugs and had clinically healthy gingiva. Ten patients (group 1) were treated with CrNiMo-based ceramic crowns (Remanium CS, Dentaurem, Germany), 10 (group 2) were treated with Inceram (Vita, Germany) ceramic crowns, and 10 (group 3) were treated with AuPtIn-based ceramic crowns (Pontostar, Bego, Germany). GCF samples were collected with paper strips before and 4 months after the placement of crowns. The samples were shocked at -70°C. The remaining maxillary second premolars in the opposing arch acted as controls. IL-1 β levels increased after the placement of CrNiMo crowns ($p < 0.05$), but for the other crowns no statistically significant changes were recorded. On the other hand, concentrations of IL-1 β did not vary with any of the crowns ($p > 0.05$). These results reconfirmed the hypothesis that base alloys cause more gingival inflammation than high-noble and all ceramic crowns.

Key Words: Gingival crevicular fluid, casting alloys, interleukin-1 β

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