Abstract

Orthodontic treatment with removable appliance produces structural and biochemical changes and breaking the balance between the synthesis and breakdown of the periodontium collagen. MMP-8 plays an important role in the remodeling of periodontal ligament during orthodontic movement. The purpose of this study was to observe the MMP-8 gene in the gingival crevicular fluid (GCF) of patients with removable orthodontic appliance. It is expected that the result can be used as a reference to decide the proper time for finger spring to be reactivated. A sample of 8 patients wearing removable orthodontic appliances was obtained. The finger springs were activated with 75 grams of force to produce canine distalization. GCF samples were collected from the distal side of upper canines before force application, 1, 2, 3, and 4 weeks after application consecutively. The sample was analyzed by using RT-PCR. Statistical analyses used were univariate analysis and Mann-Whitney U test. The result showed that the expression of MMP-8 in the GCF at t₀ was 28.1% but the force application elevated its expression to 62.5 % at t₁, and then decreased continuously at t₂ (37.5%), t₃ (34.4%), and to t₄ (31.3%). There was no statistical significant difference of MMP-8 gene expression between and to t₄. In conclusion, the highest level of MMP-8 gene expression due to orthodontic forces of removable appliance was happenend in the first week, but it declined continously in the following weeks. The proper time to reactivate the finger spring was 2 weeks after application.

Key words: matrix metalloproteinase-8, removable orthodontic appliance, gingival crevicular fluid