

PREVALENCE AND ACTIVITY OF HERPESVIRUSES IN APICAL PERIODONTITIS

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Summary

Apical periodontitis, the inflammation of the apical area of the tooth, is characterized by a polymicrobial infestation, with a dominance of opportunistic Gram-negative bacteria. Nevertheless, a pathogenic role of human herpesviruses such as Epstein-Barr virus (EBV) and human cytomegalovirus (HCMV) has been implicated recently. The aims of this study were to determine the prevalence, activity and disease association of EBV, HCMV and HHV-6 in apical periodontitis.

40 samples with apical periodontitis (17 symptomatic and 23 asymptomatic) and 40 healthy pulp controls were collected. EBV, HCMV and HHV-6 prevalences were measured by PCR detection of the viral DNA and viral activity was tested by reverse transcription PCR amplification of viral mRNA.

EBV DNA and EBNA-2 mRNA were found in apical periodontitis lesions at significantly ($p < 0.0001$) higher frequencies (72.5% and 50%, respectively) than in controls (both 2.5%). Presence of EBV DNA in apical lesions was significantly associated with large (≥ 5 mm) lesion size ($p = 0.02$). Symptomatic manifestation was significantly associated with the co-occurrence (OR=8.80, CI_{95%}: 1.69-45.76) of EBNA-2 mRNA and large lesion size. HHV-6 DNA was observed in significantly higher frequencies in apical periodontitis samples than in controls (20% vs. 2.5%, $p = 0.03$). Further classification of apical lesions revealed that subtype B of HHV-6 was significantly associated with large sized and symptomatic lesions ($p < 0.01$). Occurrence of HCMV infection was rare in both apical lesions (10%) and controls (0%). EBV (72.5%) was the most frequent herpesvirus in apical periodontitis, followed by HHV-6 (20%) and HCMV (10%).

Our findings suggest that EBV and HHV-6B infections are frequent events in apical periodontitis, especially in large sized and symptomatic lesions. This study showed that symptomatic manifestation was likely to occur if a large sized apical periodontitis lesion is aggravated with active EBV infection.

Keywords: Epstein-Barr virus, human herpesvirus 6, apical periodontitis