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ORIGINAL ARTICLE

Reduced C-reactive protein levels after root canal treatment in clinically healthy young apical periodontitis individuals at cardiovascular risk. A prospective study

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Abstract

Aim: To determine the systemic inflammatory burden, including hsCRP and its monomeric forms, in patients with apical lesions of endodontic origin treated with root canal treatment (RCT).

Methodology: Prospective pre-/post-study. Apical periodontitis (AP) individuals aged 16–40 were included ($N = 29$). Individuals received RCT and were followed at 1 and 6 months. Fasting blood samples were obtained. Apical lesions of endodontic origin (ALEO) diameter (mm), and periapical index (PAI), were recorded. The serum concentrations of total hsCRP were determined by turbidimetry. Tumour necrosis factor (TNF)-α, interleukin (IL)-6, IL-10, IL-1β, and soluble (s) E-selectin were assessed by Multiplex assay. Additionally, mCRP forms were determined in the serum of AP patients with a baseline moderate to high cardiovascular risk based on hsCRP stratification (hsCRP ≥1 mg/L) by immunowestern blot ($n = 15$). Also, CRP isoforms were explored in ALEOs from AP individuals ($n = 4$). Data were analysed with StataV16.

Results: Periapical index and ALEO sizes were reduced at both follow-up visits after RCT ($p < .05$). Serum levels of TNF-α, IL-6, IL-10, IL-1β, and sE-selectin did not show significant differences. CRP was borderline reduced at 1 month ($p = .04$); however, in AP individuals at cardiovascular risk (hsCRP ≥1 mg/L), hsCRP and its monomeric isoform significantly decreased at 1 and 6 months ($p < .05$).

Conclusions: High-sensitivity CRP and mCRP are reduced after RCT in AP individuals at cardiovascular risk.

KEYWORDS

cardiovascular diseases, C-reactive protein, heart disease risk factor, periapical periodontitis

INTRODUCTION

Apical periodontitis (AP) is the inflammation and destruction of the apical periodontium as the result of pulp necrosis and endodontic infection. Because AP is mostly asymptomatic, it is frequently detected by the presence of an osteolytic apical lesion of endodontic origin (ALEO) in a periapical radiograph (Garrido et al., 2019). At individual