C-REACTIVE PROTEIN, PERIODONTITIS AND SYSTEMIC INFLAMMATION

A report submitted to the University of Adelaide in partial fulfillment of the requirements of the Degree of Doctor of Clinical Dentistry (Periodontology)

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Abstract

Background and Aim: Periodontitis is associated with elevated C-reactive protein (CRP) in both serum and gingival crevicular fluid (GCF). CRP is an acute phase protein, the levels of which closely follow inflammatory disease activity. CRP is used as a risk predictor for cardiovascular events, including myocardial infarction. Periodontitis is associated with an increased risk cardiovascular disease. The nature of the relationship between periodontitis and cardiovascular disease is unclear, but may involve systemic inflammation as measured by CRP. Although the liver is the primary source of CRP, extra-hepatic production of CRP has been reported. Local production of CRP in the periodontal tissues may contribute to serum levels. This study aimed to determine whether CRP in GCF is produced locally in the gingivae.

Materials and Methods: Gingivae and GCF were collected from non-periodontitis and periodontitis sites. Presence of CRP in gingivae was assessed by immunohistochemistry. CRP in GCF was measured using ELISA. Gene expression for CRP in gingivae was determined using real-time polymerase chain reaction.

Results: CRP was found in both the gingivae and GCF. No gingivae had detectable amounts of CRP mRNA. Not all patients with periodontitis had detectable levels of CRP in the GCF. Some non-periodontitis patients had detectable levels of CRP in the GCF.

Conclusion: CRP in the GCF appears to be of systemic origin, and therefore may be indicative of systemic inflammation from either a periodontal infection or inflammatory disease elsewhere. CRP in the GCF may be a substitute measure for serum CRP. The correlation between levels of CRP in GCF and serum requires validation in future studies.

Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Emma Dominique Megson and, to the best of my knowledge and belief, contains no material previously published or written by another person except where due reference has been made in the text.

The input of the co-authors to this work was mainly advisory and I carried out the bulk of the laboratory procedures and all the writing of this manuscript.

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Published works:
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