牙周炎病患牙齦溝液中 Interleukin-6 和 Oncostatin M 的表現:

Gingival Crevicular Fluid from Patients with Periodontitis Expresses Interleukin-6 and Oncostatin M: Possible Modulation of the Expression of OPG and RANKL

中文摘要

背景: Oncostatin M (OSM) 屬於 Interleukin-6 (IL-6) 細胞激素族群之一，在骨頭重塑和發炎反應中扮演重要角色。近年來已進一步了解破骨細胞之生成直接受到 RANKL (receptor activator of nuclear factor κB ligand) 和它的誘導接受體 OPG (osteoprotegerin) 的調控。骨性疾病的治病機轉可能由前驅發炎細胞激素調控 RANKL 和 OPG 的平衡關係異常所致。然而，至目前爲止並沒有研究去探討 IL-6 細胞激素族群和 OPG/RANKL 之間在牙周炎的關係。

目的: 本實驗的目的在對於牙周炎中牙齦溝液中 IL-6，OSM，OPG，RANKL 做定性和定量的分析，並且釐清牙齦溝液中細胞激素表現和牙周炎嚴重程度的相關性。

材料和方法: 二十位患有牙周炎病人中，共九十五個區域依照臨床上牙周囊袋深度及探測出血情形分爲四組。在牙周病患者中牙齦溝液利用紙針分別由臨床觀測爲健康部位 (牙周囊袋 ≤ 3mm 且沒有探測出血, n=12); 輕度牙周炎部位 (牙周囊袋≤ 3mm 伴隨探測出血, n=23); 中度牙周炎 (牙周囊袋 4-~6 mm 伴隨探測出血, n=33); 重度牙周炎 (>6 mm 伴隨探測出血, n=27)中收集，另外由四位牙周健康者病人取十四個區域收集其牙齦溝液當作對照組，之後再利用酵素免疫分析法分別測量牙齦溝液中 IL-6/OSM/OPG/RANKL 所含的量 (單位:pg/site)。各組間的差異以 Kruskal-Wallis 和 Mann-Whitney U 統計檢定分析，不同細胞激素之間以及其和牙周炎嚴重程度的相關性則以 Spearman''s rank correlation 做檢測。

結果: 牙齦溝液中除了 OPG 外，IL-6、OSM 和 RANKL 在牙周炎患者中的病灶區有升高 的情形。RANKL 分別與 IL-6 或 OSM 成明顯的正相關。此外，IL-6 跟 OSM 之間亦呈現正相關。

結論: 本實驗證實 OSM 和 RANKL 亦如同 IL-6 亦可表現於牙齦溝液中，並且跟牙周病兆區嚴重程度呈正相關性。然需要進一步的縱向研究及活體內和活體外的實驗去詮釋前驅發炎細胞激素在 RANKL/OPG 中可能的影響路徑。

英文摘要

Background: Oncostatin M (OSM), a member of IL-6 cytokine family, play a curtail factor in bone remodeling and inflammation. Recent findings suggested that osteoclastogenesis is directly regulated by RANKL and its decoy receptor, OPG. Abnormalities in the balance RANKL and OPG, which may be modulated by certain

proinflammatory cytokines directly or indirectly, have been implicated to the pathogenesis of bone diseases, including periodontitis. However, no studies indicated the interaction of IL-6 cytokine family and OPG/RANKL in periodontitis. Objectives: The study aimed to identify and quantify GCF IL-6/OSM/OPG/RANKL in periodontitis patients, and to clarify their correlation with disease severity. Materials and Methods: Ninety-five sites in 20 patients with generalized periodontitis were divided into 4 groups by sites based on probing depth (PD) and bleeding on probing (BOP). In periodontitis patients, GCF was obtained using sterile paper strips from clinically health sites (PD ≤ 3 mm without BOP, n = 12 in periodontitis subjects), mildly diseased sites (PD ≤ 3 mm with BOP, n = 23), moderately diseased sites (PD = 4-~6 mm with BOP, n = 33), and severely diseased sites (PD > 6 mm with BOP, n = 27) in periodontitis patients. Fourteen clinically health sites from 4 periodontal health individuals were enrolled as the control group. Levels of IL-6/OSM/OPG/RANKL in GCF were determined by enzyme-linked immunosorbent assay (ELISA) and expressed as total amounts (pg/site). The Kruskal-Wallis analysis of variance and Mann-Whitney U test were used for group comparisons. Correlations between of cytokine levels and with the severity of diseased sites in all groups were determined by using Spearman''s rank correlation coefficient.
Results: GCF IL-6, OSM, and RANKL, but not OPG, were elevated in diseased sites from patients with periodontitis. RANKL was significantly positive correlated with IL-6 and OSM, separately. Besides, IL-6 was also positively correlated with OSM. Conclusions: These finding suggested that similar to IL-6, OSM and RANKL also expressed in GCF and were related to the severity of diseased sites. Longitudinal trials, and further in vitro and in vivo assessments are needed to elucidate the possible pathway of proinflammatory cytokines in RANKL/OPG expression.