Periodontal Disease May Negatively Affect the Success of Organ Transplant Survival

Given the association between transplant rejection and levels of interleukin-6, a molecule also found in high levels in periodontal inflammation, researchers explored the possible association between chronic periodontitis and transplant rejection.

CHICAGO – November 14, 2006 – Researchers from the University of Connecticut Health Center report an interrelationship between periodontal and systemic inflammation in solid-organ-transplant recipients. This study appears in this month's issue of the *Journal of Periodontology*

Abstract

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Elevated Serum Interleukin-6 (IL-6) in Solid-Organ Transplant Recipients Is Positively Associated With Tissue Destruction and IL-6 Gene Expression in the Periodontium

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Background: The number of transplanted solid organs and life expectancy after transplantation are steadily rising worldwide. Inflammation is widely recognized as playing a pivotal role in transplant rejection, and several studies have shown that serum interleukin-6 (IL-6) levels can identify individuals who are at greater risk for rejection. Given the known association between IL-6 and chronic periodontitis, the aim of our study was to assess the periodontal status of solid-organ transplant subjects compared to systemically healthy controls, to quantify the IL-6 levels in the serum and periodontal tissues, and to explore their association.

Methods: Forty-seven heart and kidney transplant and 18 systemically healthy age-matched individuals were recruited. Subjects received a complete periodontal

examination, and blood and periodontal tissue samples were collected for quantification of IL-6 protein and mRNA levels, respectively.

Results: Transplant subjects had significantly higher serum IL-6 levels and slightly but statistically significantly increased mean probing depths than healthy controls. Multivariable linear regression analysis adjusting for gender, diabetes, smoking, and immunosuppressant dose showed that the mean probing depth, number of missing teeth, and mean percentage of sites with ≥4 mm attachment loss were independent predictors for elevated serum IL-6 levels. Transplant subjects with chronic periodontitis had higher mean serum IL-6 levels than those without chronic periodontitis, and there was a positive correlation between periodontal IL-6 gene expression levels and serum IL-6 protein levels.

Conclusions: Periodontal tissue destruction and local IL-6 synthesis are associated with elevated serum IL-6 levels in transplant recipients. This may have serious implications in solid-organ transplant deterioration and chronic rejection.