Surveillance Spotlight: Current Concepts in Oral–Systemic Health

Relationship Between Stress, Depression and Periodontal Disease

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The contribution of psychological factors to the development and progression of periodontal disease has recently become an area of increased research activity. The most recent studies[1–4] are significant because they address 2 critical areas of interest surrounding an important perio–systemic connection.

Firstly, clinicians are becoming more interested in "individualized medicine" as an important consideration in effective patient care. We know that variations in the severity of periodontal disease and its response to therapy are influenced by many individual factors, such as coexisting systemic conditions, genetics, smoking, oral hygiene and age, but we also know that the variations cannot be fully explained by these factors. Thus, there are other factors at work and psychological factors have certainly been shown to influence many other parameters of health and disease.[5,6] Secondly, several studies completed about 10 years ago indicate that there may be strong relationships between stress, depression and periodontal disease.[3] There were 2 proposed mechanistic links: one biological and the other behavioural.[4]

The biological mechanism emphasizes how stress and depression can reduce immune system function and facilitate chronic inflammation. These effects are mediated through the hypothalamic-pituitary-adrenal axis and the production of cortisol, a glucocorticoid capable of reducing immunocompetence by inhibiting immunoglobulin A and G and neutrophil function, which leads to increased biofilm colonization and reduced ability to prevent connective tissue invasion. Additionally, after periods of chronic elevation, cortisol loses its ability to inhibit inflammatory responses initiated by immune reactions, which leads to sustained inflammatory destruction within the periodontium. The behavioural mechanism emphasizes that people suffering from stress and depression may increase poor health behaviours, such as smoking or drinking more frequently, consuming an unhealthy diet and neglecting their oral hygiene. This leads to increased oral biofilm burden and decreased resistance of the periodontium to inflammatory breakdown.

Over the last 10 years, some studies did not report any associations between stress, depression and periodontal disease, providing some lingering doubt regarding the strength of the associations. However, a recent systematic review has shown that positive study findings outnumber negative study findings by a 4:1 margin.[3] Recent studies were well-designed and confirm positive correlations between stress, depression and periodontal disease by demonstrating convincing linkages between depression and tooth loss; stress and attachment loss; stress/depression and neglect of oral hygiene; and elevated cortisol levels and pocket depth/tooth loss.[1–4] These studies firmly support both the biological and behavioural mechanisms for this perio–systemic connection.

These findings have important clinical implications because they suggest that addressing psychological factors such as stress and depression represents an important part of overall preventive periodontal maintenance and, more importantly, may also prevent oral inflammation from developing into systemic inflammation in susceptible individuals. The simple stress profile and depression scale used in one recent study[4] provides information on the psychological status of a patient (stress levels related to employment, domestic and health environments; attitudes and personality traits related to relaxation, anxiety, hostility, obsessive compulsiveness and positive/negative perceptions of life events) and may be valuable tools in a modern periodontal practice that emphasizes individualized diagnosis, treatment planning and maintenance.

References

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