Diabetes mellitus and periodontal diseases

A total of 3.2 million deaths can be attributed to diabetes each year, according to a publication by the World Health Organization and the International Diabetes Federation to mark the launch of their joint program 'Diabetes Action Now' (1). Updated estimates suggest that six deaths are attributable to diabetes or related conditions somewhere in the world every minute, a figure three times higher than previous calculations. In most developing countries at least one in 10 deaths in adults aged 35–64 years is attributable to diabetes, and in some the figure is as high as one in five. Diabetes has become one of the major causes of premature illness and death in most countries, mainly through the increased risk of cardiovascular disease (CVD) (2).

Diabetes is a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life. The cause of diabetes continues to be an unknown, although both genetics and environmental factors such as obesity and lack of exercise appear to play roles. In order to determine whether or not a patient has prediabetes or diabetes, health care providers conduct a fasting plasma glucose test (FPG) or an oral glucose tolerance test. Either test can be used to diagnose prediabetes or diabetes. With the FPG test, a fasting blood glucose level between 100 and 125 mg dl^{-1} signals prediabetes. A person with a fasting blood glucose level of 126 mg dl^{-1} or higher has diabetes (3).

Existing data reveals strong evidence that diabetes is a risk factor for gingivitis and periodontitis and the level of glycaemic control appear to be an important dynamic in this relationship (4, 5). Most of the available evidence implies that diabetes also increases the risk of periodontitis. A systematic meta-analysis stated that the majority of studies reveal a more severe periodontal condition in diabetic adults than in adults without diabetes (4). These studies involved a large number of individuals and showed a noteworthy association between periodontitis and diabetes. In the Pima Indians of Arizona, a population with the highest incidence of type 2 diabetes in the world, the prevalence and severity of attachment loss and bone loss was greater among diabetic subjects than among non-diabetic control subjects in all age groups (6).

Despite these studies, the relationship between metabolic control of diabetes and periodontal disease is difficult to characterize with certainty. It has been suggested that the connection can be equated to the correlation between glycaemic control and other co-morbidities of diabetes, such as retinopathy and nephropathy. We know that many have poor control of their diabetes, and are at increased risk of diabetic complications. We also know that many of these complications never manifest themselves. As well, those with exceptional control of their diabetes can be treated as any other immunocompetant patient, as they are at a diminished risk of diabetic complications. However, even those who expend the best efforts may experience major diabetic complications. It has been suggested that the immune response plays a major role in a person's response, but that threats to the periodontium are great. It has also been suggested that periodontal disease be considered the sixth complication of diabetes mellitus (7).

So what do we know? That periodontal diseases and diabetes mellitus are closely linked and both are both common chronic diseases worldwide, and that obesity and inflammation are contribute significantly to the relationship. We also know that with good oral hygiene and diabetic control, periodontal complications of diabetes can be minimized. As well, controlling obesity by good nutritional habits and exercise can decrease incidence of obesity and minimize the impact of type 2 diabetes. While more research is always helpful, read the most recent review on this topic for evidence-based oral care for the person with diabetes (8).

References

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Resources

National Diabetes Education Program http://www.ndep.nih.gov/

Worldwide Initiative for Diabetes Education http://www.worldwidediabetes.com/system/html_site/index.htm

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