

Are diabetes and obesity linked to periodontitis?

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The University of Illinois at Chicago has received a two-year federal grant to continue a study on how periodontitis, an inflammatory disease of the tissues surrounding teeth, is linked to type 2 diabetes and obesity.

Dr. Keiko Watanabe of the UIC College of Dentistry has found that periodontitis accelerates the onset of insulin resistance in rats fed a high-fat diet. Her new research will determine how periodontitis affects diabetic complications in the retina, aorta and pancreas.

"The prevalence of type 2 diabetes has risen dramatically as the result of an increase in obesity caused by a high-fat diet, junk food and a sedentary lifestyle," said Watanabe, associate professor of periodontics. Although the association between obesity, type 2 diabetes and periodontitis is recognized, she said, the underlying causes remain poorly understood.

Watanabe said the goal of the new study is to identify the causes by which periodontitis influences insulin resistance, type 2 diabetes and organ damage, so clinicians will be able to screen prediabetic individuals at risk of developing the disease. A plan to treat periodontal inflammation will also be developed so that insulin resistance will not accelerate to diabetes.

A key challenge is to determine whether the relationship between diabetes, obesity and periodontitis is causal, Watanabe said. Most of the data linking the conditions are based on epidemiologic or cross-sectional studies, she said.

Watanabe uses female diabetic fatty rats in her research, a model that closely resembles humans who consume a high-fat diet and subsequently develop insulin resistance and type 2 diabetes. Human subjects, she said, cannot be used to study the direct effect of periodontitis because it is not ethical to induce the disease.

"Several prospective studies using human subjects demonstrated that the treatment of periodontitis led to improvement of glycemic control in subjects with type 2 diabetes," she said. "However, confounding factors, such as medications used to treat type 2 diabetes, body mass index, the stage and duration of diabetes, and the onset and severity of periodontitis are difficult to assess or are broadly controlled in such studies.

"Thus, the causal nature between periodontitis, diabetes and obesity remains unclear."

Source: University of Illinois at Chicago

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