Researchers uncover cause of gum disease related to type 2 diabetes

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Going to the dentist isn't fun for anyone, but for those with periodontal disease related to type 2 diabetes, a new research discovery may have them smiling. In a report appearing in the August 2014 issue of the *Journal of Leukocyte Biology*, one of the most important blood cells involved in the human immune response, B cells, are shown to promote inflammation and bone loss in type 2 diabetes-associated periodontal disease. These findings support the idea that treatments that manipulate the responses of B cells may treat or prevent this complication.

"Our study identified common inflammatory mechanisms shared by type 2 diabetes and periodontal disease. It paves the way for the development of novel therapeutics which aim to simultaneously treat both type 2 diabetes and its complications," said Min Zhu, Ph.D., a researcher involved in the work from the department of microbiology at Boston University School of Medicine in Boston, Massachusetts.

To make this discovery, scientists used an experimental model (mouse model) of periodontal disease and applied it to two groups. The first group had a genetic alteration that knocked out all B cells. The second group had normal B cell levels. When fed a low-fat diet, without development of obesity and type 2 diabetes, both groups demonstrated a similar extent of oral bone loss and inflammation. However, when they were fed a high-fat diet, became obese and developed type 2 diabetes, oral bone loss and inflammation occurred in the normal group with B cells, but did not develop in the group with the altered gene to knock out the B cells. This suggests that the B cell-response might be a viable target

for pharmacological intervention in both type 2 diabetes and periodontal disease, as well as potentially in other type 2 diabetes complications.

"This is an exciting study that helps us better understand why some complications related to type 2 diabetes occur," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "For those who are dealing with periodontal disease related to type 2 diabetes, this is especially exciting. B cell targeting drugs are available for B cell cancers and these new findings could open the door for applying new B cell-based treatment strategies for periodontal diseases and perhaps other inflammatory conditions."

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