More evidence suggests type 2 diabetes is an inflammatory disease

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As people's waistlines increase, so does the incidence of type 2 diabetes. Now scientists have a better understanding of exactly what happens in the body that leads up to type 2 diabetes, and what likely causes some of the complications related to the disease. Specifically, scientists from Denmark have found that in mice, macrophages, a specific type of immune cell, invade the diabetic pancreatic tissue during the early stages of the disease. Then, these inflammatory cells produce a large amount of pro-inflammatory proteins, called cytokines, which directly contribute to the elimination of insulin-producing beta cells in the pancreas, resulting in diabetes. This discovery was published in the January 2014 issue of the *Journal of Leukocyte Biology*.

"The study may provide novel insights allowing development of tailor-made anti-inflammatory based therapies reducing the burden of type 2 patients," said Alexander Rosendahl, Ph.D., a researcher involved in the work from the Department of Diabetes Complication Biology at Novo Nordisk A/S, in Malov, Denmark. "These novel treatments may prove to complement existing therapies such as insulin and GLP-1 analogues."

To make their discovery scientists compared obese mice that spontaneously developed diabetes to healthy mice. The mice were followed from a young age when the obese mice only showed early diabetes, to an age where they displayed systemic complication in multiple organs. Presence of macrophages around the beta cells in the pancreas and in the spleen was evaluated by state-of-the-art flow cytometric technology allowing evaluation on a single cell level. At both
the early and late stages, the diabetic mice showed significant modulations compared to healthy mice.

"The more researchers learn about obesity and type 2 diabetes, the more it appears that inflammation plays a critical role in the progression and severity of these conditions," said John Wherry, Ph.D., Deputy Editor of the Journal of Leukocyte Biology. "This study sheds light on how a key inflammatory cell is connected to disease and what might go wrong when someone has type 2 diabetes. The knowledge gained from such studies offers hope that new immune-based therapies could be developed to mitigate the severity of such diseases."


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