METABOLISM

Contribution of B cells to obesity and insulin resistance

B cells are involved in two mechanisms that lead to obesity and insulin resistance, according to a new study.

Previous work by Barbara Nikolajczyk and her team showed that T cells are implicated in the development of type 2 diabetes mellitus (T2DM). The T cells seemed to require 'support cells' to induce T2DM-associated inflammation. Nikolajczyk and colleagues designed a new study to identify these support cells.

As B cells were thought to be likely candidates for this role, the researchers compared lymphocyte function, inflammation and metabolic outcomes in obese wild-type and B-cell-null mice. The B cells from the obese mice had a proinflammatory cytokine profile, including an inability to produce IL-10. The B-cell-null mice did not become insulin resistant and were less inflamed in response to obesity.

An *in vitro* analysis of human lymphocytes showed that B cells promote

the T-cell-related inflammation that characterizes T2DM. "B cells therefore contribute to obesity and insulin resistance through two mechanisms: secretion of a proinflammatory cytokine profile and contact-mediated support of proinflammatory T-cell function," explains Nikolajczyk.

The authors note that more work needs to be done to identify the molecular mechanisms underlying the B-cell support of T-cell function. "From the clinical perspective, tests on B-cell depletion are critical towards identifying when this type of therapy might be most effective in humans," concludes Nikolajczyk.

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Original article DeFuria, J. *et al.* B cells promote inflammation in obesity and type 2 diabetes through regulation of T-cell function and an inflammatory cytokine profile. *Proc. Natl Acad. Sci. USA* doi:10.1073/pnas.1215840110