Reduced blood leukocyte and neutrophil numbers in the pathogenesis of type 1 diabetes.

Abstract:

Very little is known about the role of the innate immune system in the course of human type 1 diabetes. Here we investigated neutrophil numbers along with other leukocyte populations in patients at diagnosis of type 1 diabetes and during prediabetes. Complete and differential blood counts were analyzed from 107 adult patients with newly diagnosed type 1 diabetes, 21 children with persistent islet autoantibodies and a family history of type 1 diabetes, and 1238 age and gender matched control subjects, all individuals without any signs of acute infection. Adult patients with newly diagnosed type 1 diabetes had significantly lower total WBC (p<1×10^-4), neutrophil (p<1×10^-4), basophil (p<1×10^-4), monocyte (p=4×10^-4) and lymphocyte (p<1×10^-4) counts compared to control subjects. Erythrocyte, eosinophil and platelet counts did not differ between groups. Similarly, children with persistent islet autoantibodies had decreased WBC (p=0.001), neutrophils (p=0.003), and lymphocytes (p=0.006) in comparison to control children. Our findings demonstrate a perturbation of leukocyte homeostasis at and prior to onset of type 1 diabetes suggesting a general involvement of the innate immune system in the pathogenesis of type 1 diabetes.