

Detection of enterovirus infection in pancreatic islets in patients newly diagnosed with type 1 diabetes

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Norwegian scientists with European partners have found evidence for the presence of enterovirus in pancreatic islets of type 1 diabetic patients. This provides evidence consistent with the theory that a low grade enteroviral infection in the pancreatic islets contribute to disease progression in humans.

The discovery suggests the possibility for both [antiviral treatment](#) and vaccine of type 1 diabetes, according to a [press release](#) from the University of Oslo.

Type 1 diabetes affects [young people](#) and children. Unlike type 2, type 1 cannot be treated by diet changes and exercise; insulin is needed. Only 29 % of the patients reach the recommended goals for treatment to prevent disabling diabetes complications.

The Diabetes Virus Detection study (DiViD) is the first to examine fresh pancreatic tissue for the presence of viruses after the diagnosis of type 1 diabetes. Minimal pancreatic tail resection was performed 3-9 weeks after onset of type 1 diabetes in 6 adult patients (age 24-35 years).

The presence of enteroviral capsid protein 1 (VP1) and the expression of class I HLA were investigated by immunohistochemistry. Enterovirus RNA was analyzed from isolated pancreatic islets and from fresh frozen whole pancreatic tissue using PCR and sequencing. Non-diabetic organ

donors served as controls. VP1 was detected in the islets of all type 1 diabetes patients (2 of 9 controls).

Hyperexpression of class I HLA molecules was found in the islets of all patients (1 of 9 controls).

Enterovirus-specific RNA sequences were detected in 4 of 6 cases (0 of 6 controls). The results were confirmed in different laboratories. Only 1.7 % of the islets contained VP1 positive cells and the amount of enterovirus RNA was low. The results provides [evidence](#) for the presence of enterovirus in pancreatic islets of type 1 [diabetic patients](#), being consistent with the possibility that a low grade enteroviral infection in the [pancreatic islets](#) contributes to disease progression in humans.

More information: "Detection of a low-grade enteroviral infection in the islets of Langerhans of living patients newly diagnosed with type 1 diabetes," Lars Krogvold, Bjørn Edwin, Trond Buanes, Gun Frisk, Oskar Skog, Mahesh Anagandula, Olle Korsgren, Dag Undlien, Morten C Eike, Sarah J Richardson, Pia Leete, Noel G Morgan, Sami Oikarinen, Maarit Oikarinen, Jutta E Laiho, Heikki Hyöty, Johnny Ludvigsson, Kristian F Hanssen, Knut Dahl-Jørgensen, [DOI: 10.2337/db14-1370](https://doi.org/10.2337/db14-1370)

Provided by Oslo University Hospital

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