

Bone marrow stem cell transplants can benefit some type 2 diabetes patients, study shows

June 3 2021



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Type 2 diabetes patients who are not overweight and who have had the disorder for less than a decade can benefit from stromal stem cells

transplanted from their own bone marrow, according to a study published today in *STEM CELLS Translational Medicine*.

In a randomized clinical trial at Vinmec Research Institute of Stem Cell and Gene Technology in Hanoi, Vietnam, researchers investigated the safety and potential therapeutic value of administering [bone marrow](#) stromal [stem cells](#) to patients with type 2 diabetes. In each case, the cells were autologous, or taken from the patients' own bodies.

A total of 30 [adult patients](#) with different body mass indexes whose type 2 diabetes histories varied from one to 25 years were recruited for the study. Each received two infusions of the cells intravenously or by injection into an artery that supplies blood to the pancreas.

Researchers monitored the patients for 48 hours and re-examined them at one-month, three-month, six-month and one-year intervals. No significant problems were detected in the patients' health as a result of the treatment and they appeared to benefit equally from both infusion methods.

"Our patients tolerated the procedure well and showed short-term reductions in their [blood glucose levels](#) after the treatment," said Liem Nguyen, the institute's research director. "We also found that some of them were able to temporarily reduce the dosage of their diabetes medications."

Some 420 million people worldwide have type 2 diabetes, a disorder accounting for about 90 percent of all diabetes cases that often leads to disability or death. People with type 2 diabetes cannot make good use of the insulin their bodies produce. Increased [physical activity](#) and a [healthy diet](#) can improve the disorder in some people, but many must take insulin or drugs to control their blood glucose levels.

Patients in the Vinmec study were classified into three groups based on the diabetes medicines they were regularly taking before their stem cell infusions. Some were maintaining their blood glucose levels with insulin only. Others were taking drugs but no insulin, and still others were taking a combination of insulin and drugs.

After receiving the treatment, more than half of the patients were able to lower the doses of their diabetes medicines.

"Our trial, the first to link the outcomes of autologous bone marrow stromal stem cell transplantation with body mass index and t 2 diabetes duration, shows the procedure is safe and opens the way for other [clinical trials](#) exploring the potential benefits of this treatment in non-obese patients who have had the disorder less than 10 years," Nguyen said.

Bone marrow stromal stem cells, also known as mesenchymal stem cells, play a key role in the body's immune response and can transform into connective tissue cells in any organ. Over the past 50 years, they have emerged as a versatile cell source in the field of regenerative medicine.

"The results of this randomized clinical trial for patients with type 2 diabetes and the injection of their own bone marrow stromal stem [cells](#) is encouraging and potentially may add to the treatment arsenal for this chronic disease that affects so many worldwide," said Anthony Atala, M.D., Editor-in-Chief of *STEM CELLS* Translational Medicine and director of the Wake Forest Institute for Regenerative Medicine. "Of special interest is the short-term efficacy in patients with a history of type 2 [diabetes](#) for less than 10 years and a bone mass index of less than 23. This work opens opportunities for future research to further investigate this area of work."

More information: "Type 2 Diabetes Mellitus Duration and Obesity

Alter the Efficacy of Autologously Transplanted Bone Marrow-derived Mesenchymal Stem/Stromal Cells," [stemcellsjournals.onlinelibrar ...](#)
[10.1002/sctm.20-0506](#)

Provided by AlphaMed Press

Citation: Bone marrow stem cell transplants can benefit some type 2 diabetes patients, study shows (2021, June 3) retrieved 24 December 2022 from
<https://medicalxpress.com/news/2021-06-bone-marrow-stem-cell-transplants.html>

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