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Stem cells show early promise for treating type 2 diabetes

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Human trials under way at the University of Miami and other hospitals in Europe, Asia and Latin America using immature adult stem cells are showing promise for people with type 2 diabetes.

In a University of Miami clinical trial recently published in the online journal Cell Transplantation, 25 patients achieved better insulin production, lower blood-sugar levels and reduced need for insulin injections.

In the trial, still in its pilot stage, doctors extracted immature adult stem cells from the patients' own bone marrow, purified and concentrated them, and injected them into arteries near the pancreas. They then put the patients into hyperbaric oxygen chambers like those used for divers with decompression sickness - also called the "bends" - and subjected them to 10 hours of pure oxygen at 2.4 times the atmospheric pressure at ground level.

Researchers believe the high-pressure oxygen pulled extra stem cells from the patients' bone marrow, adding to the stem cells injected near the pancreas. They say the immature stem cells developed into pancreatic cells, regenerating the pancreas's ability to produce natural insulin.

"This could be very important," says Dr. Camillo Ricordi, director of the Cell Transplant Center and the Diabetes Research Institute at University of Miami. "It could be an improved treatment for diabetes, substantially

ameliorating type 2 and preventing the complications of the disease."

Nearly 24 million people in the U.S., or 8 percent of the population, have diabetes, which can cause problems for the eyes, kidneys, nerves and heart, according to the Centers for Disease Control and Prevention.

Ricordi cautioned that the optimistic findings come from small pilot studies involving only dozens of patients, and three to four more years of research are needed before practical treatments might start.

"We always have to avoid hype and be careful not to put too much hope in pilot trials," Ricordi said. "But the first results are really promising."

Two more successful trials over three or four years would be needed before the FDA might approve the treatment for the public. The studies, coordinated by University of Miami's Diabetes Research Institute, will also take place at the Karolinska Institutet in Stockholm, Stem Cell Argentina in Buenos Aires and other institutions.

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