ESOT Congress
THE INTERNATIONAL TRANSPLANT CONGRESS®
ATHENS | 17-20 SEPTEMBER 2023

PRESS RELEASE

Embargoed: 00:01 CEST, Sunday, 17 September 2023

Islet transplantation boosts long-term survival in kidney transplant recipients with type 1 diabetes

(17 September 2023, Athens, Greece) Islet transplantation significantly reduces the risk of transplantation failure and enhances life expectancy in individuals with type 1 diabetes who undergo kidney transplantation, a new study has revealed. [1]

This breakthrough research, presented today at the European Society for Organ Transplantation (ESOT) Congress 2023, compared the long-term outcomes of patients with type 1 diabetes who underwent kidney transplantation and received an islet transplantation*, with patients who underwent kidney transplantation and then managed their diabetes with insulin alone. The study found that islet transplantation exhibited a substantial advantage over insulin treatment, significantly reducing the risk of transplant failure and mortality. [1]

The researchers investigated every patient with type 1 diabetes in France who received a kidney transplant between 2000 and 2017. Among 2393 patients, 327 were eligible for islet transplantation, including 47 that were actually transplanted with islets. To ensure comparability between the two groups, the researchers matched patients based on factors, such as the year of transplantation, age of the recipient, kidney function, or HBA1c. [1]

After comparing the two groups, the researchers found that islet transplantation had a significant benefit over insulin alone in terms of reducing the risk of transplantation failure and death. The results showed a 0.47 hazard ratio for graft failure in the islet transplantation group, indicating a 53% lower risk of failure compared with the insulin-only group. As well as this, patients who received an islet transplantation had a higher estimated life expectancy for a 10-year follow-up (9.61 years compared with 8.85 years for those on insulin alone).[1]

Notably, when investigating the outcomes of islet transplantation alone, two crucial positive outcomes were identified. At the 1-year mark following the islet transplantation, there was an estimated 89.4% probability of graft survival. Additionally, patients were estimated to have a 70.2% probability of achieving independence from insulin at 1 year. [1]

"Although islet transplantation has previously been shown to improve glycaemic control compared with conventional insulin therapy in recent clinical trials, little was known about its long-term impact on patient prognosis until now," said Dr Mehdi Maanaoui, the lead author of the study. "These results are exciting and provide hope for people living with type 1 diabetes and kidney transplants."

"Islet transplantation could be a game-changer in the management of type 1 diabetes, and our research demonstrates a clear association between islet transplantation and a substantial increase in life expectancy," added Dr Mehdi Maanaoui.

In 2021, there were estimated to be approximately 8.4 million individuals across the globe with type 1 diabetes. Prevalence is expected to rise, with projections ranging from 13.5 to 17.4 million cases predicted by 2040.[2] Additionally, approximately 30% of patients with type 1

diabetes will suffer from kidney failure.[3] These figures highlight the escalating public health challenge posed by type 1 diabetes and the urgent need for effective management and treatment strategies to address this increasing burden on healthcare systems worldwide.

Dr Mehdi Maanaoui emphasised, "Whilst further research is required to ensure the outcomes of islet transplantation begin to match the long-term success achieved with pancreas transplantation, we hope these findings help to increase patient access to islet transplantation."

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Note to editors:

A reference to the ESOT Congress 2023 must be included in all coverage and/or articles associated with this study.

This study was conducted by researchers from France and Switzerland on behalf of the TREPID Group.

For more information or to arrange an expert interview, please contact Phoebe May at phoebe.may@emotiveagency.com or press@esot.org.

***Key terms defined:**

Islet transplantation: Extracted islet cells from the pancreas of a deceased donor are implanted into the liver of a patient with type 1 diabetes.[4]

About the study author:

Mehdi Maanaoui is a nephrologist at the University of Lille, specialising in kidney and islet transplantation. His passion for cell transplantation led him first to the Netherlands in the laboratory of Prof Ton Rabelink (Leiden University Medical Center) and then to the islet laboratory of Prof François Pattou (Inserm U1190 – EGID), Lille, France. He is currently undertaking a research programme exploring methods to improve clinical islet transplantation, especially for people with type 1 diabetes undergoing kidney transplantation. He has authored more than 30 publications, mainly in transplantation and teaches nephrology and transplantation in the University of Lille.

About ESOT:

The European Society for Organ Transplantation (ESOT) was founded 40 years ago and is dedicated to the pursuit of excellence in organ transplantation. Facilitating a wealth of international clinical trials and research collaborations over the years, ESOT remains committed to its primary aim of improving patient outcomes in transplantation. With a community of over 8000 members from around the world, ESOT is an influential international organisation and the facilitator of the biennial congress which hosts approximately 3500 experts who come to meet to explore and discuss the latest scientific research.

References:

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3. National Kidney Foundation. Diabetes - A Major Risk Factor for Kidney Disease. Available at: https://www.kidney.org/atoz/content/diabetes (Accessed: August 2023).

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