

Male kidneys for men only?

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The gender of donor and recipient plays a larger role in kidney transplants than previously assumed. Female donor kidneys do not function as well in men – due to their smaller size. Women have a higher risk of rejecting a male donor kidney. Therefore, in the future, gender should be considered more in the allocation of donor kidneys, say researchers from Basel and Heidelberg.

These results are based on an analysis of the "Collaborative Transplant Study", the world's largest database with long-term results of organ transplants under the leadership of Professor Dr. Gerhard Opelz, Medical Director of the Department of Transplantation Immunology at the Institute of Immunology of Heidelberg University Hospital. Researchers Professor Dr. Alois Gratwohl, Basel University Hospital, and Professor Opelz published their analysis in the medical journal *The Lancet* (Vol. 372, p. 49).

Data from almost 200,000 kidney recipients analyzed

The researchers analyzed data from almost 200,000 organ recipients who received a kidney transplant between 1985 and 2004. Overall, transplanting a female kidney was less successful than a male kidney. This is attributed to the fact that due to their smaller size, female kidneys have fewer nephrons – the active components of the kidneys that filter urine.

Immunological rejection problems occurred most frequently when women received a male kidney – for them, the risk that the organ would

be rejected was eleven percent higher in the first year after the operation than for other donor-recipient combinations. And even two to ten years after the operation, the risk of rejection was still 10 percent higher than for other groups.

Y chromosome likely responsible for rejection

"The higher rate of rejection is most likely caused by the gender-specific Y chromosome in men," explains Professor Opelz. In the future, gender should be one of the factors considered when making a decision on assigning an organ to a patient.

However, the higher risk of rejection in women is partially compensated by the effect of more nephrons in a male kidney, so that on average, female recipients of male kidneys do not have significantly poorer overall results.

Should kidneys be allocated based on gender in the future?

The allocation of organs for German patients is organized – in coordination with five other European states – by the computer of the organ distribution center Eurotransplant. Donor kidneys are assigned according to criteria (waiting time, compatibility, etc.) set by the commission for organ transplants of the German Medical Association. The computer program was also developed by the immunologists from Heidelberg.

Immune functions associated with the Y chromosome and which can lead to rejection of the organ need to be studied more closely in the future, emphasizes Connie L. Davis, kidney expert at the University of Washington in Seattle (USA) in an editorial in *The Lancet*. However, a

recommendation to transplant only same-sex organs is not yet appropriate, because long-term success is good even if the donor and recipient are of the opposite sex, says Davis.

Citation: Alois Gratwohl, Bernd Döhler, Martin Stern, Gerhard Opelz: H-Y as a minor histocompatibility antigen in kidney transplantation: a retrospective cohort study. *The Lancet* - Vol. 372, Issue 9632, 5 July 2008, Pages 49-53

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