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KIDNEY DONOR AGE LINKED TO AORTIC STIFFENING

Effects on Arteries Might Account for Worse Results with Older Kidneys

Washington, DC (February 21, 2008) — Transplantation of kidneys from older donors is followed by increased stiffening of the recipient's aorta—which may help to explain the higher rates of cardiovascular disease and death in patients receiving kidneys from "expanded criteria" donors, reports a study in the April *Journal of the American Society of Nephrology*.

Led by Drs. Michel Delahousse and Michel Chaignon of Foch Hospital in Suresnes, France, and Jean-Philippe Haymann of Tenon Hospital in Paris, the researchers used a technique called carotid-femoral pulse wave velocity to measure aortic stiffness in 74 patients who had received kidney transplants from deceased donors. The aorta is the body's large central artery; increased stiffness is a sign of damage to the large arteries. Such arterial damage is one of the main reasons for the high rates of cardiovascular disease and death in patients with end-stage renal disease (ESRD).

When first measured, three months after transplantation, aortic stiffness was related exclusively to characteristics of the transplant recipient. The aorta was stiffer in transplant recipients who were men, older, and had higher blood pressure.

However, when the measurement was repeated after 12 months, aortic stiffness had gotten significantly worse in patients who received kidneys from the oldest donors (53- to 70-years old). "We found that donor age emerged as a strong and independent determinant of recipient aortic stiffness one year post-transplantation," comments Dr Delahousse. In contrast, for patients receiving kidneys from younger donors, aortic stiffness decreased.

For recipients of older-donor kidneys, pulse wave velocity was increased by one meter per second—"A very significant finding," adds Dr. Delahousse. "Indeed, such an increase was previously associated with a 39 percent increase in overall risk of death in ESRD patients."

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The results could be a significant step toward targeted interventions after kidney transplantation, with the goal of reducing cardiovascular risk and mortality and improving long-term results. "Early identification of patients with worsening arterial disease following transplantation would mean that they could benefit from drug treatments to reduce arterial stiffness," says Dr Delahousse. Further studies would be needed to determine whether this strategy improves the overall outcomes of kidney transplantation.

The findings also provide an intriguing new piece of evidence regarding the complex interrelationships between the kidneys and cardiovascular system. "Our study provides the first strong cause-and-effect evidence of the impact of kidney characteristics upon the mechanical properties of large arteries," states Dr. Delahousse. "The results suggest that the kidney could be involved, normally or otherwise, in the process of arterial stiffening that is the hallmark of aging of the large arteries."

The results do not question the increasingly common practice of transplantation from expanded criteria donors (ECD). These donors have certain characteristics—such as older age, high blood pressure, or slightly decreased kidney function—that make them less than ideal as organ donors. Dr. Delahousse emphasizes: "In the current context of organ shortage, ECD transplantation confers a significant survival advantage compared to remaining on dialysis, even if only under certain conditions."

The researchers acknowledge some limitations of their study, including its small size and a potential but "reasonably low" risk of selection bias.

The American Society of Nephrology (ASN) is a not-for-profit organization of 10,500 physicians and scientists dedicated to the study of nephrology and committed to providing a forum for the promulgation of information regarding the latest research and clinical findings on kidney diseases. ASN publishes JASN, the *Clinical Journal of the American Society of Nephrology* (CJASN), and the *Nephrology Self-Assessment Program* (NephSAP).

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