Influenza Vaccine Safe and Beneficial for Transplant Recipients, Research Finds

The influenza vaccine is safe and lowers the risk of organ loss and death in kidney transplant recipients, a new study finds (Hurst FP et al., May Clin J Am Soc Nephrol). The findings suggest that concerns about the safety of the vaccine in transplant recipients are unwarranted and that the vaccine can provide clear benefits to these individuals.

Safety and benefits of vaccination

While influenza infection has been linked to increased morbidity and mortality in transplant recipients, the effectiveness and safety of the influenza vaccine in these individuals have been questioned. Some studies suggest that the vaccine may not be effective after kidney transplantation because patients may not be able to form enough protective antibodies owing to the immunosuppressive effects of the drugs they must take to prevent allograft rejection. In addition, influenza infection has been associated with allograft rejection, perhaps due to stimulation of the immune system. Because vaccination stimulates the immune system, there have been concerns that influenza vaccination could also induce an immune response that could trigger rejection.

Guidelines recommend that all transplant patients receive the influenza vaccine after transplant, but there are limited data to support its efficacy or safety in the early period after transplantation. To investigate, Frank Hurst, MD, of the Walter Reed Army Medical Center and F. Edward Hebert School of Medicine and his colleagues analyzed Medicare claims for influenza vaccination and influenza infections in 51,730 adult Medicare patients who were first transplanted from January 2000 to July 2006 and were followed through October 2006. Among the 9678 (18.7 percent) patients who were vaccinated against the

Donor-Specific Antibodies Accelerate Arteriosclerosis in Kidney Transplant Recipients

By Tracy Hampton

P.reformed donor-specific antibodies contribute to transplant patients’ development of arteriosclerosis of the kidneys and may play a key role in organ rejection, according to research reported in the May Journal of the American Society of Nephrology.

The findings may change the way physicians think about the kidney rejection process and could even impact care related to cardiovascular diseases in general.

Attack of the antibodies

The detection and treatment of donor organ rejection has historically focused on T-cell-mediated processes, but recent research by a number of institutions has revealed that antibody-mediated rejection—which can occur when a transplant recipient mounts antibodies against their new organ—is a major contributor to the declining function and ultimate loss of transplanted kidneys (Terakas P, Mizutani K. Antibody Mediated Rejection: Update 2006. Clin J Am Soc Nephrol 2006; 1:400–403).

To study the effects of antibody-mediated rejection, Gary Hill, MD, of the Hôpital Européen Georges Pompidou, APHP, in Paris and his colleagues examined kidney biopsies from transplant pa...
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flu in the first year after transplantation, factors associated with vaccination included older age, diabetes, later year of transplant, and tacrolimus or mycophenolate use at discharge. Vaccinations were less frequent among men, African American recipients, and patients with high panel reactive antibody or those who received induction immunosuppression or expanded criteria donor kidneys.

“We wanted to determine whether or not it is safe to provide influenza vaccinations to recent transplant recipients based on early reports of vaccination potentially causing rejection,” Hurst said. “While this can only be determined in a randomized controlled trial, we demonstrated that there was no increase in associated risk of allograft loss or death when a national sample of patients was vaccinated against influenza. There was actually a significant decrease in adverse outcomes.”

Patients who were vaccinated within the first year of kidney transplantation were 23 percent less likely to experience organ loss and 18 percent less likely to die during the study period than individuals who were not vaccinated, Hurst and his team reported. A total of 310 (0.6 percent) patients got the flu, and they were no more likely to experience organ loss than patients who did not get the flu.

Influenza infection showed a trend toward increased risk of death, though. In addition, patients with claims for influenza infection in the first year were 1.58 times more likely to experience rejection in the first year after transplant.

“The observed vaccination rates are surprisingly low,” said David Gilbertson, PhD, director of epidemiology and biostatistics at the U.S. Renal Data System in Minneapolis, who was not involved with the research. The low rate of vaccination may stem from either concerns for inducing an acute rejection or the possible lack of efficacy in preventing infection, the authors said. Yet “the finding of probable benefit from vaccination, combined with no evidence of increased allograft rejection episodes suggests strongly that concerns against influenza vaccination are unwarranted,” Gilbertson said.

Others in the field also welcomed the findings.

“The study by Hurst et al. confirms the finding from previous single-center studies that influenza vaccination during the first year is safe in renal transplant recipients and is not associated with acute rejection,” said Woojin James Chon, MD, a transplant nephrologist and an assistant professor at the University of Chicago’s Pritzker School of Medicine.

Raymund Razonable, MD, an associate professor of medicine at the Mayo Clinic in Rochester, Minn., hopes the findings will lead to increased vaccination among transplant recipients.

“As a transplant infectious disease physician, I welcome the results of this study since it reiterates our recommendation to vaccinate transplant recipients in order to reduce their risk of influenza and its associated morbidity and mortality,” he said. “Indeed, one of the findings in this article is that the occurrence of influenza infection during the first year after kidney transplantation, which could have been prevented with vaccination, was associated with acute rejection.”

Remaining questions

Studies have generated mixed results with regard to whether kidney transplant patients can generate protective antibody titers after influenza vaccination. Hurst and his colleagues suggest that even if vaccination does not elicit a strong enough immune response to confer protection against infection, it is possible that any response will offer some protection or at least decrease the severity of the disease.

They also noted that most studies in this area have excluded patients within six months of transplant. Yet the available evidence supports some degree of response in the period more than six months after transplant, presumably as a result of the reduction of overall levels of immunosuppression. The ideal timing of vaccination remains to be determined.

Study co-authors include Jessica Lee, MD, Kevin Abbott, MD (Walter Reed Army Medical Center and F. Edward Herbert School of Medicine); Rahul Jindal, MD, PhD (Walter Reed Army Medical Center); and Lawrence Agodoa, MD (National Institutes of Health).

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