

6/21/04

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AUBURN DEVELOPS REVOLUTIONARY NEW CANINE KIDNEY TRANSPLANT PROCEDURE



AUBURN -- Auburn University's [College of Veterinary Medicine](#) has developed a revolutionary new canine kidney transplant procedure that promotes increased tolerance of transplanted organs between unrelated dogs.

It also offers the possibility that dogs that receive transplanted kidneys may be able to live out their lives without taking high-doses of immunosuppressive drugs.

Clint Lothrop and Michael Tillson are heading a team of AU veterinary researchers and clinicians that has shown that if simultaneous bone marrow and kidney transplants are performed, the dog receiving the new organ is much less likely to try to reject the organ.

"The big obstacle has always been that the recipient's immune system wants to reject the transplanted organ unless powerful immunosuppressive drugs are given for the rest of the dog's life," said Tillson, an associate professor of surgery in the Department of Clinical Sciences. "Our first research dog is still doing well more than five years after receiving a transplanted kidney, and it is no longer on immunosuppressive medications. Based on our overall results, we have started offering the option of a kidney transplant to clients whose dogs have end-stage kidney disease. We have performed several of the procedures in the past two months."

The research team developed the protocol from Lothrop's research into non-myeloablative bone marrow transplantation for treatment of a red blood cell disorder, pyruvate kinase deficiency. He showed that after the bone marrow transplantation corrected the enzyme deficiency, the dogs would also accept a skin graft from the donor dog as well.

"We reasoned that if a skin graft could be accepted after a bone marrow transplant, then maybe another organ, such a kidney, might be less likely to be rejected when combined

with a bone marrow transplant," said Lothrop, an internal medicine professor in the college's [Scott-Ritchey Research Center](#). "After starting with genetically matched siblings, we have moved to unrelated dogs and have found we can still decrease the requirement for chronic immunosuppression. We feel it is because this protocol induces tolerance.

"Tolerance is a condition where the recipient's immune system accepts the transplanted organ as its own. Right now, we begin to decrease the immunosuppressive drug dosage around 60 days after the transplant surgery and see how much the medication can be reduced."

Lothrop says kidney failure had previously been considered a death sentence for dogs because of organ rejection and limited availability of hemodialysis. While kidney transplants have been previously performed, the dogs had to be on anti-rejection medications for life. This made the dogs more susceptible to illness and represented a significant financial commitment since it could cost more than \$30 per day, or nearly \$11,000 per year, for large dogs.

"Increasing tolerance is the key, because without it, something as simple as kennel cough could cause significant illness or even lead to the death of a dog on immunosuppressive drugs," said Lothrop. "And it should be less expensive for dog owners in the long-run, making a kidney transplant a more affordable option for them."

The first client animal to have the transplant at Auburn was Talitha, a six-year-old dog owned by William and Tammy Hanson of Mountain Home, Ark.

"She was initially given a less than a 1 percent chance of survival," said Tammy Hanson. "We took her to several hospitals before learning of Auburn's new method. It's been a wonderful experience at Auburn and she is doing great."

Hanson says Talitha suffered kidney failure due to antifreeze poisoning at an entrance gate leading to the Hanson's sanctuary for abused and chronically ill dogs. Their not-for-profit organization, EDNAH, or Every Dog Needs a Home Animal Rescue and Sanctuary, provides care for nearly 200 dogs.

"Someone put out antifreeze near our gate and Talitha drank it," Hanson said. "Our local sheriff is working to help us find the person who did it. Talitha has been with us three years, and her health was important enough for us to make some sacrifices to get the transplant. Hopefully the new procedure will someday become a mainstream operation at veterinary hospitals."

Dog owners from New Orleans to Atlanta also have had their dogs undergo the new transplant protocol at Auburn with the hope of extending their pet's lives. Another benefit of the transplant protocol is that the recipients' owners agree to provide homes for the dogs that served as the kidney donors.

"Just like humans who donate a kidney to a relative, the donor dogs can live healthy lives with a single kidney," Tillson said. "So, in effect, two dogs are getting better lives through the process."

Although numerous centers across the country offer feline kidney transplants, the kidney transplant program at Auburn is one of two centers with an active canine transplantation program. Auburn is the only program using this specific protocol that offers the chance of reducing or eliminating the requirement for long-term immunosuppressive drug therapy.

The Auburn veterinarians are also hoping to expand their research in a fight against canine and feline diabetes by using the same protocol to investigate transplanting insulin producing islet cells.

Support for the original research was provided by the [Morris Animal Foundation](#), a non-profit animal health research organization, and the College of Veterinary Medicine's Department of Clinical Sciences and the Scott-Ritchey Research Center, a facility devoted to companion animal health.

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