NEWS & EVENTS

Cisco's Legacy

-Research into Deadly Disease Advances Thanks to Fund Memorializing Beloved Pet

Mark Dickherber and his wife, Stephanie Hoff, of Chesterfield, left their 7-year-old Italian greyhound, Cisco, with a family member when they went on vacation in 2009. Concerned that the dog seemed abnormally tired and somewhat despondent, Cisco's dog sitter took him to his veterinarian. The vet treated Cisco for what was believed to be a muscle injury and sent him home. However, his condition failed to improve. On the morning Dickherber and Hoff were scheduled to return to St. Louis, the Italian greyhound began urinating blood.

Upon hearing the news, the couple went directly from the airport to the veterinary clinic where their ailing pet was again being treated, this time with blood transfusions.

"He would respond just a little to the transfusions," Dickherber said. "We were told we needed to get him to a specialist. We didn't understand the seriousness of the disease."

The disease responsible for the Italian greyhound's illness was immune-mediated hemolytic anemia (IMHA), a condition in which a body's own immune system begins to hunt down and kill its red blood cells. The mortality rate for dogs stricken with IMHA is 50 to 70 percent, a grim statistic that has not changed in decades, said Carol Reinero, DVM, PhD, associate professor of small animal internal medicine at the University of Missouri College of Veterinary Medicine. In an effort to change that dire prognosis, Reinero is leading research at MU's Comparative Internal Medicine Laboratory into IMHA and a related condition, immune-mediated thrombocytopenia (ITP), a disease that involves the immune system destroying platelets. "We treat these disorders with strong drugs to suppress the immune system but little is known about the specific immune defects driving these diseases," Reinero said. "We need more information on which parts of the immune system are going haywire so we can more selectively target the underlying immune pathology."

On the advice of their veterinarian, Dickherber and Hoff brought Cisco to the College's Veterinary Medical Teaching Hospital. Laura Nafe, DVM, MS, was a fourth-year veterinary student on her emergency medicine and critical care rotation when Cisco was brought in.

"He was my patient for three days," Nafe said. "He was diagnosed with presumptive IMHA before being referred here. He was really sick. He had a very severe form of the disease."

Shortly after arriving at the veterinary hospital in Columbia, Cisco slipped into a coma and subsequently had a seizure. Despite the efforts of a team of clinicians, technicians and students, he succumbed to multiple organ failure.

IMHA can be frustrating for veterinarians and challenging for pet owners, Reinero explained. Sometimes the disease is considered primary and its cause is unknown. In other cases, it is deemed secondary, a complication of another underlying illness. Nor is treatment universal. It is not uncommon for dogs to fail to respond to the prescribed drugs. In other cases, dogs' initial treatment is a success, but they then suffer a relapse. "Steroids are our first line of defense," Reinero explained. "The goal is to shut off the abnormal immune response and then slowly taper the dogs off the drugs. The side effects of these drugs can be unpleasant. The dogs drink a lot. They urinate a lot. They are ravenous. They pant. They can take on a pot-bellied appearance. There are skin and coat changes."

Life-saving blood transfusions and extensive diagnostic testing to determine if the IMHA is primary or secondary can also make it an expensive disease to treat for the animals' owners.

After losing Cisco, Dickherber and Hoff decided to channel their grief into helping other pets.

"Laura Nafe was unbelievably compassionate throughout the process," Dickherber said. "To see that level of compassion was striking, despite the devastation of the situation. We wanted to not just help Mizzou, but as well to create an avenue to memorialize Cisco. We wanted to create a legacy to help pets in the future."

Dickherber and Hoff established the Cisco Fund for Immunologic Research at the CVM. Funds have been used to spearhead research projects, train graduate students and purchase equipment that will help dogs with IMHA.

Nafe meanwhile earned her Doctor of Veterinary Medicine degree at MU and relocated to North Carolina State University where she undertook a small animal medicine and surgery rotating internship. The experience further cultivated the interest in immunology that had been seeded while she was caring for Cisco. Attracted by a strong residency program and the opportunity to simultaneously pursue her master's degree and engage in an intensive research project under the guidance of Reinero, and her fellow internal medicine researchers, Leah Cohn, DVM, PhD, professor of small animal internal medicine, and Amy DeClue, DVM, MS, assistant professor of small animal internal medicine, Nafe returned to MU in 2010.

For her master's project, Nafe's goal was to develop an assay to determine the best treatment for each patient's immune mediated disease and to better understand why the disease occurs. She was able to pursue her project because of financial support available through the Cisco Fund.

Nafe's study involved evaluating blood from healthy dogs subsequently tested in the laboratory with a panel of immunosuppressant drugs to assess their potency. This assay ultimately evaluates the ability of an immune cell, the lymphocyte, to proliferate (divide) in respond to stimuli. With immune-mediated diseases, lymphocytes are expected to proliferate excessively; with effective immunosuppressants, proliferation will be inhibited effectively.

Nafe completed her residency and master's degree and has decided to pursue a career in academic veterinary medicine. She recently accepted a position as a clinical instructor at the University of Wisconsin-Madison School of Veterinary Medicine. However, the research she initiated at Mizzou will continue. Her mentor, Reinero, will now test lymphocytes in stricken dogs to confirm and determine which type of lymphocyte is abnormal. The work is possible through continued support from the Cisco Fund and the College's Clinical Scientist Award. Reinero is currently recruiting dogs with IMHA and ITP to determine the underlying immune defect that drives the devastating auto-reactive antibody production. To participate, dogs should not have been treated with immunosuppressants. Reinero needs to draw a small volume of blood from the dogs just one time for the study. Treatment of their dogs won't be delayed by participation.

"This is not a typical trial," she explained. "There is no financial incentive for the owners; however, the goal of the trial is to help us figure out what is causing the disease. This in turn, we hope, will help us better manage dogs with these devastating diseases in the future."

To determine if a dog is suitable for participation in the study, contact Reinero at (573) 882-7821. To support the Cisco Fund or learn about other ways to help the College's research, education and patient care mission, contact the College director of Development at 888-850-2357, or visit http://www.cvm.missouri.edu/giving/how.htm.

Learn more about The Cisco Fund.

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