



PURINA Pro Club

Hound Group Update

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Researcher Aims to Establish New Surgical Protocol for Chylothorax

"Jake," a barely 1-year-old Afghan Hound, was the youngest of three Afghan Hounds owned by Bill and Gwen Griffin of Loveland, Colo. One day, while attending a puppy match, Gwen noticed that Jake was coughing.

"Coincidentally my two older Afghan Hounds had coughs and runny noses, and were on antibiotics. It seemed like good common sense to give Jake antibiotics, so we did. At the time I thought it was more from his excitement pulling on the lead than a real cough. It wasn't even a horrible sounding cough, but it didn't go away."

Less than two weeks later, Gwen received a call from her husband saying that Jake was having trouble breathing. "Jake would not lie down, as exhausted as he seemed to be," she recalls. "In retrospect, I'm sure his lungs and entire thoracic area were really hurting him."

They quickly rushed Jake to a nearby emergency clinic, where they learned he suffered from chylothorax, a disease in which a fatty fluid called chyle accumulates in the chest cavity. The lungs gradually collapse, causing dyspnea, or difficulty breathing. Eventually, dogs may die.

In Jake's case, the disease already had progressed to advanced stages. He suffered from lung lobe torsion, had fibrous deposits in the chyle fluid, and

his left lung was collapsing, making it difficult for him to breathe. After consulting four veterinarians, the Griffins made the difficult decision to have their beloved hound humanely euthanized. None of the veterinarians felt the young hound would have an uncompromised recovery.

Chyle is a lymphatic fluid with a milky appearance consisting primarily of absorbed fat molecules. Originating in the intestines, chyle in normal dogs flows to a large lymph vessel in the chest, called the thoracic duct, where it empties into large blood vessels near the heart and eventually reaches the blood circulation. In dogs with chylothorax, chyle instead leaks into the chest cavity.

Some potential causes of chylothorax include heart disease, heartworm or a thoracic mass. In many cases, chylothorax is considered to be idiopathic, meaning no obvious cause can be determined. The disease can occur in any breed of dog as well as cats. Among breeds considered highly susceptible are the Afghan Hound, Borzoi, Shiba Inu, and Shetland Sheepdog.

In Afghans, lung lobe torsion, or a twisting of a lung lobe around its base where the major blood vessels and airway enters the lung, often occurs, making it a particularly devastating condition. Afghan Hounds also exhibit a higher-than-average

fatality rate during and after treatment in comparison with other affected breeds. Some sources report that only 10 percent of affected Afghan Hounds survive.

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Jonathan F. McAnulty, D.V.M., Ph.D., associate professor of surgery at the University of Wisconsin School of Veterinary Medicine, has been studying alternative treatments for chylothorax in dogs since 2003. "I think that the less than 10 percent survival rate in Afghans may be an overstatement, although 50 percent or less is likely accurate," he says.

Idiopathic chylothorax seems to be a middle-age disease. The typical age of onset is around 7 years of age but dogs as young as 1 year of age also can be affected. Though it is unclear to scientists why Afghan Hounds are particularly susceptible to chylothorax, one theory is that their deep chest cavity may play a role.

Early Treatment Is Key

Across the board in all breeds of dog, the most common sign of chylothorax is coughing although the degree of cough varies among individuals. Vomiting and difficulty breathing also may occur.

Amy Hites of Newport, Mich., first noticed that her 3-year-old Afghan

Owners of Dogs with Chylothorax May Participate in Research

Owners of Afghan Hounds and other breeds affected by chylothorax, a disease in which a fatty fluid called chyle accumulates in the chest cavity eventually causing a collapse of the lungs and death, may take part in research under way at the University of Wisconsin School of Veterinary Medicine.

Jonathan F. McAnulty, D.V.M., Ph.D., associate professor of surgery, is investigating two surgical procedures to determine which is most effective in treating dogs. He is looking for dogs affected by the spontaneous idiopathic chylothorax in which no obvious cause can be determined.

The surgical procedures being studied include the traditional thoracic duct ligation (TGL) procedure combined with the innovative ones. "Dogs receive the potential benefit achieved with the current standard of treatment for chylothorax plus the new methods," McAnulty says.

To learn more about the clinical trials for treatment of chylothorax in dogs, visit www.vetmed.wis.edu/dss/ChyloThoraxTrial/index.php. You also may contact McAnulty at (608) 263-7600 or mcanulti@svm.vetmed.wisc.edu.

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Hound, "Moosie," had a dry, persistent cough with a gag. "It gradually became worse and productive. He would cough and then gag at the end, and bring up small amounts of foamy sputum. This is when we went from being somewhat concerned to realizing something is really wrong."

Early and aggressive therapy of chylothorax is important in order to prevent damage to the lungs. Chyle is an irritant to the chest cavity that can cause serious problems over time. Medical management techniques may include chest draining, dietary alterations to low fat diets, and drug treatments.

"The lung lobes are eventually encased in a sheet of fibrous deposits and are no longer able to fully expand," McAnulty explains. "With time, this fibrosis progressively restricts the lungs, resulting in a fatal compromise of respiratory function."

While a diagnosis of chylothorax can often be relatively straightforward with chest radiographs and chest taps, McAnulty cautions that the presence of the milky, lymphocytic fluid is not by itself diagnostic. "To reach a definitive diagnosis of chylothorax, the fluid must be analyzed biochemically," he says.

In addition, periodic drainage of chyle from the dog's chest cavity can be beneficial, although it is considered a "holding pattern" for many dogs. "A progressive wasting is often seen as the nutrients contained in the chyle are lost to the dog as the fluid is removed from the chest over time," McAnulty says.

The amount of chyle affecting Moosie was voluminous, which can be common in some dogs. "He would fill with one to three liters of chyle very quickly," Hess says.

The most common surgical treatment for chylothorax involves thoracic duct ligation (TDL), a procedure first described by scientists in 1982. In this procedure, a surgeon stops the flow of chyle into the chest by tying the thoracic duct off with suture material. Studies in dogs have shown a success rate of about 50 percent to 60 percent with this method.

No new treatments have been developed since 1990, McAnulty notes. Though several drug treatments, including rutin and octreotide, have been introduced to help reduce the volume of chyle formation, they have not proved effective treatment options.

New Surgical Treatments

Two new surgical procedures are currently being studied by McAnulty. Sponsored by the Morris Animal Foundation, the study involves comparing the traditional surgical TDL method combined with innovative procedures to see which is most effec-

tive. Afghan Hounds are one breed being evaluated. The study currently includes 22 dogs of which three are Afghans.

The first procedure being studied is referred to as cisterna chyli ablation with thoracic duct ligation (CCA-TDL). It involves cutting the cisterna chyli, a holding tank for chylous fluid located in the abdomen, to end the outpouring of chyle into the chest cavity. "When the cisterna chyli is cut away, the connection of lymphatic channels that carry chyle from the abdomen to the thoracic duct is disrupted," McAnulty explains.

"This in turn stimulates the channels to find new pathways, diverting chyle into venous circulation in the abdomen. This eliminates the potential for leakage in the chest cavity. The procedure also helps to prevent lymphatic hypertension, or increased pressure in the lymphatic system, that commonly occurs with TDL and is hypothesized to lead to bypass of the ligatures on the thoracic duct."

The second procedure being studied is called pericardiectomy with thoracic duct ligation (P-TDL). This involves the surgical removal of part of the pericardium, or the membrane surrounding the heart. Removing a portion of the pericardium is believed to help reduce hypertension in the venous circulatory system that may be associated with some degree of venous blockage at the heart.

"Both methods look promising," says McAnulty. CCA-TDL has shown an 82 percent survival rate, whereas P-TDL has a 60 percent survival rate. Like other breeds in the study, Afghan Hounds do not respond particularly better to either treatment; however, McAnulty also believes Afghans have a higher mortality rate.

Amy Hites' Afghan Hound, "Moosie," now 8, participated in the P-TDL study three years ago. He was 3 when diagnosed. Though Moosie had a successful outcome, Hites says the condition was challenging to face. "At times, dealing with the disease was very hard. It was almost as though he was pleading to live although he couldn't breathe. Today, you would never know Moosie had ever had chylothorax. He is 100 percent."

The Afghan Hound of America (AHCA) is supporting McAnulty's research, having recently voted to help fund the fourth year of the study by making a donation to the Morris Animal Foundation. Sandy Frei, co-chair of the AHCA Health Committee, says, "One of our parent club members has collected pedigrees of dogs affected with chylothorax hoping that one day a researcher will be able to determine if there is a genetic link. We think breeders and owners need to be aware of this condition, which is why we brought Dr. McAnulty to speak at the Breed Symposium at the 2005 National Specialty."

Studying alternative treatments for chylothorax is difficult because of the overall low incidence of the disease, McAnulty says. Additionally, no definitive experimental model can accurately replicate a disease that has no apparent cause.

"Laboratory studies can only take the clinician so far in terms of evaluating a specific treatment for chylothorax," he says. "After that point, it becomes necessary to examine the impact of the treatment in a controlled rigorous manner in patients with the spontaneous disease."

Staying Optimistic

Owners who notice signs of chylothorax in their Afghan Hounds should contact a veterinarian right away. "If there's a diagnosis of chylothorax, you want to begin treatment as soon as possible," Hites says.

Griffin agrees. "We felt so badly that we didn't get Jake to the veterinarian sooner, thinking he had just this little cough and was on antibiotics. If your dog has a cough, get a chest X-ray and do so quickly. Unfortunately we knew nothing about chylothorax. It helps to be informed about potential health conditions in your breed."

"The most important advice I could give is to not give up," McAnulty says. "Many clients get such a bad prognosis about chylothorax that they have their animals euthanized without even trying alternatives. You should seek care from specialists who are knowledgeable on current treatment approaches."

"Do not delay surgical treatment. I am not enthusiastic about medical management as I have not seen particularly dramatic results, although there may be individual animals that showed responses. By far and large, medical management seems to mostly delay the need for surgery and allow more chronic damage in the thorax." ■

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