



## PURINA Pro Club

# Yorkshire Terrier Update

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## Lymphangiectasia Is a Genetic Condition in Yorkshire Terriers

When Pat Quinn's Yorkshire Terrier, "Bonnie," starting having diarrhea, it seemed the condition was under control but then it would come back the next week. "The diarrhea would let up, and then the next week, the problem would be just as bad," says Quinn of Rock Hill, S.C.

Before the diarrhea was under control, Bonnie lost two pounds, a considerable amount for the toy breed that weighs no more than 7 pounds. Not uncommon, the dog had a voracious appetite despite having diarrhea.

Yorkshire Terrier breeder Georgina Miller of Livermore, Calif., bought a female Yorkie that appeared perfectly healthy to add to her breeding program. Then, one day the dog began to act as though she constantly needed to urinate and her stomach was tight with fluid. She didn't have diarrhea though.

Both Yorkies were diagnosed by their veterinarians as having lymphangiectasia, a potentially fatal protein-losing enteropathy (PLE). Unfortunately, both dogs had already produced litters when they were diagnosed. Quinn and Miller lament that potentially the dogs have passed the condition on to their offspring.

Miller has lost three Yorkshire Terriers to lymphangiectasia, and she has neutered or spayed many others that are possible carriers. "This is a horrible death for the dogs. As a breeder, you worry about every puppy because there is no genetic test for the condition," she says.

Besides lymphangiectasia, other conditions that may lead to protein-losing enteropathy in dogs are various forms of inflammatory bowel disease and intestinal lymphosarcoma. Dilatation, or enlargement, of the lymphatics can also be secondary to non-gastrointestinal diseases such as chronic liver disease and congestive heart failure.

Kenneth W. Simpson, BVM&S, Ph.D., DACVIM, professor of medicine at Cornell University College of Veterinary Medicine, explains that in dogs with primary intestinal lymphangiectasia, the vessels containing lymph, which is made up of rich proteins and long-chain fatty acids, become very distended.

Instead of lymph flowing normally into the bloodstream, lymph leaks into the intestines. As a result, dogs lose proteins, lipids and fats through the stool rather than absorbing the nutrients as they normally would. The failure to absorb fat-soluble vitamins, such as vitamins D and K, may cause low blood calcium and magnesium levels, and bleeding tendencies.

### More Common Than Believed

Intestinal lymphangiectasia is considered a genetic disease in Yorkshire Terriers and Norwegian Lundehunds. Clinical signs are not usually present from birth and the mode of inheritance is not known. Other breeds such as the Basenji, Chinese Shar-Pei and Soft-Coated Wheaten Terrier experience protein-losing enteropathies that can involve some degree of lymphatic distension related to intestinal inflam-

mation. Soft-Coated Wheaten Terriers are unusual as they have a combination of intestinal and renal protein loss.

Neither Quinn nor Miller has experienced lymphangiectasia in a young dog, and both believe the condition is more common in Yorkies than most breeders and owners realize. "Lymphangiectasia can be confusing to diagnose because other diseases have similar signs," says Quinn. "Dogs may go undiagnosed or the condition, and thus treatment, may be confused with other intestinal problems."

Among the first signs of lymphangiectasia an owner will notice is a dog may lose weight despite developing a rounded abdomen or pot-bellied appearance due to accumulation of fluid in the abdomen. A dog may look listless and generally not well. "The clinical signs are a result of the intestinal loss of protein and malnutrition," Simpson says. "Weight loss, diarrhea and fluid buildup in the abdomen are common in severely affected dogs. Signs may develop slowly and come and go. They may include difficulty breathing due to fluid accumulation in the chest."

In trying to determine the source of illness, a veterinarian is likely to first perform blood tests. A dog with PLE will usually have low levels of blood proteins (albumin and globulin), cholesterol and lymphocytes in the blood. The blood calcium level may also be low due to low albumin and poor absorption of vitamin D.

"Basically, the combination of these test results in a dog with chronic diarrhea or weight loss points toward a protein-losing enteropathy," Simpson says. "Abdominal ultrasound is particularly useful for detecting fluid in the abdomen and intestinal anatomic abnormalities and for evaluating intestinal thickness. It also can provide information on liver venous congestion related to lymphatic distension."

A definitive diagnosis to determine what is causing the intestinal protein loss requires an intestinal biopsy, either by endoscopic examination or surgical biopsy. Endoscopy may show white blebs filled with fluid on the inner

### Recognizing Signs of Lymphangiectasia

Lymphangiectasia is one type of protein-losing enteropathy (PLE) that occurs in Yorkshire Terriers in which a dog is unable to properly process proteins, lipids and fats. Owners should look for signs of disease and take their Yorkie to the veterinarian immediately for diagnosis so treatment can begin sooner when it is more effective. Signs to look for are:

- Weight loss;
- Fluid buildup in the abdominal cavity surrounding the organs (or ascites);
- Listless appearance and generally not well;
- Chronic diarrhea; and
- Difficulty breathing.

## Lymphangiectasia

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layer or surface of the intestines that are strongly supportive of lymphangiectasia, and biopsies can be obtained quickly and easily, without opening the abdominal cavity.

With a surgical approach, a veterinarian can acquire full thickness biopsies, thoroughly examine the intestines and surrounding tissue for distended lymphatic channels and abnormalities located on the surface or outer surface of the intestinal wall that would not be able to be visualized during endoscopy. Due to the minimally invasive nature of endoscopy, it often is the initial approach of choice. If results are inconclusive, surgical biopsy can be performed.

### Treating Signs of Disease

Treatment for lymphangiectasia usually involves reducing protein loss in an attempt to restore a dog's protein levels. Diet and medication generally are used in combination to help reduce inflammation in the intestinal wall. Dietary recommendations usually are similar to those for other causes of small bowel diarrhea. A highly digestible, fiber-restricted diet that includes an antigen-restricted or hydrolyzed protein is usually prescribed. Fat restriction is recommended for more severe cases.

"The use of medium-chain triglycerides (MCTs), rather than long-chain fatty acids, may provide a better assimilated source of calories as MCTs bypass

the lymphatic system," Simpson says. "Commercial prescription diets formulated for small intestinal disease can help to meet the nutritional needs of dogs with PLE and often have MCTs compounded into them, which makes the diet much more palatable than adding MCT oil to the food."

Anti-inflammatory medication, such as prednisone, may help to decrease inflammation and reduce the loss of protein. Antibiotics may be helpful as well to modify the intestinal flora and decrease bacterial translocation. Additional therapy may be necessary to counteract the impact of malabsorption of fat-soluble vitamins.

"Treatment enables some patients to stay in remission for several years," Simpson says. "Others continue to lose protein and body condition, develop more severe hypoproteinemia and its consequences, ascites (or fluid in the abdominal cavity) and edema. Some dogs suffer blood clots induced by their disease or immunosuppressive therapy, and others become septic and die. Either way, I always consider the prognosis to be guarded, with remission the mission, rather than cure."

Prevention is difficult because the mode of inheritance is not known, thus a genetic test is not available to determine dogs that carry the gene mutation. "The worse part is that the disease surfaces after a dog's breeding years," Quinn says.

In Miller's case with her dog, she traced the disease to the dog's grandparents and followed it in puppies she raised. Now, she's waiting to see

whether the dog's grandchildren will also have the disease.

Quinn encourages owners to be sure to talk to a breeder before buying a dog from his bloodline. "Ask about the health of the dogs and find out what the breeder's experience of the disease has been. Although the gene mutation is unknown, open communication and sharing of information among breeders are important to increasing awareness."

To learn more about the prevalence of lymphangiectasia and other protein-losing enteropathies in the breed, the Yorkshire Terrier Club of America Foundation recently conducted a health survey. Mary Trimble, president, was pleased that many respondents wanted to know more about the condition.

"Many people indicated that the survey made them rethink about dogs they had lost in the past to what they thought were other conditions," she says. "It's never too late to start documenting the cause of death in your dogs. One day, this information may be crucial to research seeking the genetic cause of this terrible condition." ■

Purina appreciates the support of the Yorkshire Terrier Club and particularly Mary Trimble, president of the YTCA Foundation, in helping to identify topics for the *Purina Pro Club Yorkshire Terrier Update* newsletter.

## Lyme Disease Is Becoming More Prevalent

Lyme disease, like other tick-borne diseases, is spreading. The best defense is to check dogs after they've been outside, no matter where you live. Some veterinarians recommend testing for the most common tick-borne diseases as part of annual veterinary exams.

Researchers are identifying more disease organisms and tick species that carry them. "Many ticks carry more than one disease within them," says Richard Goldstein, D.V.M., DACVIM,

associate professor of small animal medicine at Cornell University College of Veterinary Medicine. "Most common in the Northeast is Lyme disease."

Possibly the most common tick-borne illness in the nation, Lyme disease afflicts dogs and humans. Caused by the spirochete *Borrelia burgdorferi*, Lyme is carried by the hard-shell deer tick (*Ixodes scapularis*) endemic in the Northeast and upper Midwest.

An infected tick presumably does not transmit the disease until about

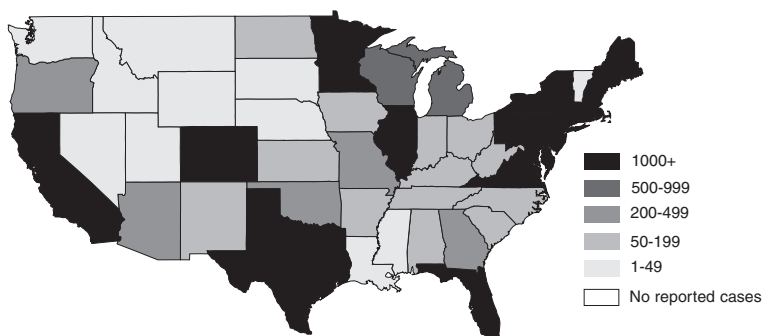
36 to 48 hours after attachment, so prompt removal can help prevent illness. A Lyme vaccine also is available for dogs. Lyme is often mistaken for other illnesses. Clinical signs in dogs include sudden or intermittent lameness, hot or swollen joints, fever and lack of appetite, but Goldstein says only 10 percent to 20 percent of infected dogs show signs.

"The most common clinical manifestation is actually no sign," Goldstein says. "Most dogs don't get the human-type rash possibly because the initial skin lesion may not be noticed due to the color of the skin and hair coat so it's hard to know when they're sick or even when they're bitten. It typically takes two to five months for a dog to clinically show signs, though we may just be missing the initial flu-like symptoms."

Treatment with penicillin or tetracycline-related antibiotics usually cures the signs, but signs can recur because often the organisms are not totally eliminated by the treatment regimen. While some cases may resolve without treatment, Lyme disease left untreated can cause polyarthritis as well as heart, neurological or kidney damage. ■

### Where Lyme Disease Is Found

The following map highlights the number of detected canine Lyme disease cases found in the United States. Because many dogs go untested for tick-borne diseases, the actual number of infected dogs is likely many times higher than what is depicted on the map.



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