PURINA Pro Club

Toy Group Update

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Alopecia X Researchers Study 'Mystery Skin Disease'

When Dana Coventry's Pomeranian, "Zsa Zsa," lost her coat, her veterinarian, working with a veterinary dermatologist, diagnosed the young dog with Alopecia X. Alopecia means hair loss, and the X represents a "mystery skin disease" that affects Pomeranians and Miniature Poodles. The disease also affects larger Nordic breeds, such as Alaskan Malamutes and Chow Chows.

Breeders have long referred to the black skin disease of Pomeranians, although not all dogs suffering from Alopecia X experience skin that turns black. It is actually hyper-pigmentation, or increased pigmentation of the skin, that causes patches of skin to become darker in color. Hair loss occurs on the trunk of the body and often the tail, but usually not on the head or front limbs.

Linda A. Frank, D.V.M., DACVD, professor of dermatology at the University of Tennessee School of Veterinary Medicine, likens Alopecia X to "hair cycle arrest." Frank suspects that Alopecia X is caused by a genetic defect or alteration. "One theory is that the Finnish Spitz, being one of the oldest breeds and one that is related to many breeds with the problem, may be where the defect originated. In breeding for favorable characteristics of this breed, breeders also likely selected for the hair cycle abnormality that shows up in some dogs."

Coventry, a new Pomeranian breeder, was relieved to learn that Zsa Zsa most likely had no pain or discomfort with Alopecia X, despite looking unsightly and getting cold easily due to loss of hair. Eventually two more of her Poms lost their coats. "I essentially had three Poms from three different bloodlines with a cosmetic coat condition," says Coventry of Bloomfield Township, Mich. "When I researched Alopecia X, I found that little is known about what causes the disorder."

Her concerns increased when a champion male Pomeranian, BIS/BISS CH Firebrook's Tabasco Fiasco ("Toby"), who she co-owns with her good friend, Donna Machniak, did not come back into coat after what was thought to be normal seasonal loss of hair coat.

"At first, it was a terrible blow," she says. "It was heartbreaking. Then, I realized how lucky we actually were. It wasn't life-threatening, and Toby could have developed something much worse." Fortunately, her male champion eventually got his coat back, as sometimes happens with Alopecia X.

A diagnosis of Alopecia X is largely a process of elimination, Frank explains. "A host of other conditions can cause hair loss. Seasonal allergies, endocrine disorders, parasites and even some types of cancer can cause coat shedding or loss."

A veterinarian may conduct a variety of testing to determine the cause of loss of coat. These include a blood test, urinalysis, thyroid testing, adrenal hormone testing and skin biopsy.

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> *Linda A. Frank, D.V.M., DACVD, professor of dermatology at the University of Tennessee School of Veterinary Medicine*

The condition generally affects both genders equally, Frank says.

"It is important to rule out other causes of endocrine alopecia such as hypothyroidism and Cushings disease," Frank notes. "Seasonal flank alopecia, post-clipping alopecia, or failure of hair to regrow following clipping, follicular dysplasia, and fungal infections also must be eliminated as causes."

Over the years, Alopecia X has been labeled a variety of terms, all indicative of effective treatments, such as castration-responsive dermatitis, adult-onset growth hormone deficiency, growth hormone deficiency, and adrenal hyperplasia-like syndrome. No one treatment is effective for all dogs.

The term castration responsive alopecia was based on the fact that

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Owners Can Contribute to Alopecia X Research

The exact cause of Alopecia X, or black skin disease, in Pomeranians is not known. The condition causes unexplainable hair loss, although researchers think that a genetic mutation may be the cause.

Owners of Pomeranians affected by Alopecia X are encouraged to submit DNA samples of affected and normal dogs. Researchers at the Institute of Genetics in Bern, Switzerland, are hoping to learn the mode of inheritance. For information, owners may visit *www.vetsuisse.unibe.ch/genetic/content/ e2353/e2479/index_eng.html.*

In addiiton, Pomeranian owners may help support Alopecia X research at various institutions through donations to the Pomeranian Charitable Trust. For information, you may call (248) 258-9259. Gifts, which are tax deductible, may be sent to:

Marge Kranzfelder, Trustee
Pomeranian Charitable Trust
821 Brown Road
San Juan Bautista, CA 95045

Alopecia X

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spaying females and neutering males affected with the condition often led to a regrowth of hair, though not always permanently. Spaying or neutering as an effective treatment begs the question whether the disorder is due to a sex hormone imbalance.

Growth hormones have been effective in treating some dogs with Alopecia X, leading to the theory that growth hormone imbalances could be the culprit. However, this has since been disproved. Lysodren and Trilostane are drugs used to treat Cushings disease that alter the adrenal glands' production of cortisol. In some cases, these drugs have been effective. Both growth hormone and drugs used to treat Cushings disease have potential side effects that veterinarians must consider.

An over-the-counter hormone drug, oral melatonin, has helped some dogs although diabetic dogs could be adversely affected. An owner should consult his veterinarian before giving a dog melatonin, a long-used medication for dogs with stress-related problems, such as storm phobia. Since melatonin is also a sleep aid, it may cause lethargy, a potential undesired side effect.

Though Alopecia X is not considered to be primarily stress-induced, owners of affected dogs relate stories of increased hair loss when dogs were under stress. When a beloved member of Coventry's family died, the dogs grieved and their condition worsened.

After Coventry's three Pomeranians developed Alopecia X and then her champion show dog, she pledged to help raise funds to support research of the skin condition. "When I went public with my dogs' problems, I received significant positive feedback from the Pomeranian community," she says. "Owners and breeders came forward to express relief that someone was finally bringing attention to a problem more widespread than had been previously known."

Support from the American Pomeranian Club, Pomeranian Charitable Trust and the Pomeranian Club of Canada, plus private donors worldwide, are helping to provide financial assistance for several Alopecia X research studies. Frank received a grant from the AKC Canine Health Foundation to look at an estrogen receptor antagonist as a potential treatment. Unfortunately, the drug did not work at the dosage needed to grow hair.

Other researchers worldwide also are focusing on different aspects of Alopecia X. In Switzerland at the Institute of Genetics in Berne, researchers are collecting DNA samples and pedigree information for genetic analysis. The goal is to learn the mode of inheritance.

Tosso Leeb, Ph.D., professor of genetics, says, "Our preliminary data strongly support genetic factors contributing to Alopecia X, but we have not yet found a specific DNA mutation that predisposes dogs to Alopecia X. In our study, we have found male Pomeranians are more frequently affected than females although females can be affected as well." Leeb and his research team have received support from the AKC Canine Health Foundation, Pomeranian Charitable Trust and Keeshonden Club of America.

The Swiss geneticists are evaluating the cathespin L. gene (CTSL). A mutation in the CTSL gene has been found to cause hair loss in the furless mouse. They theorize that a similar mutation in the canine CTSL gene may cause Alopecia X. Healthy and affected Pomeranians and Keeshonden are needed for the study.

By studying healthy and affected dogs these researchers may one day determine a genetic basis for Alopecia X and ultimately develop a genetic test to identify carriers and affected and normal dogs. This would allow breeders to make selective breeding decisions and potentially reduce disease incidence.

Unfortunately, for Coventry, whose show dog Toby lost his coat due to Alopecia X, she and the co-owner decided to remove him from the show circuit. At the time, he was No. 1 in the breed.

"It was devastating, not just because it was so much fun to see him win, but because Toby genuinely loved showing," she says. "Though it was a painful decision, we are thankful that it was not a life-threatening condition."

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.

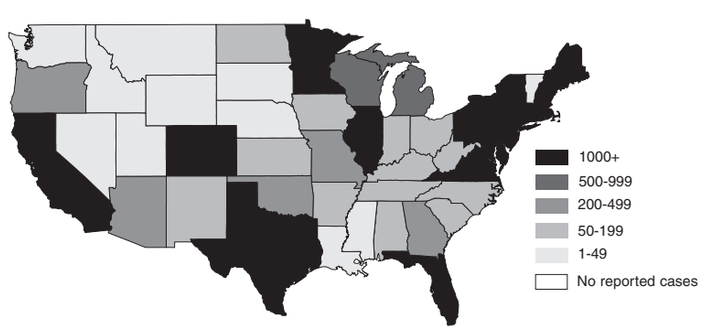
An infected tick presumably does not transmit the disease until about 36 to 48 hours after attachment, so prompt removal can help prevent illness. A Lyme vaccine also is available for dogs. Lyme is often mistaken for other illnesses. Clinical signs in dogs include sudden or intermittent lameness, hot 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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