



PURINA Pro Club

Chihuahua Update

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Hypoglycemia Requires Quick Intervention in Toy and Small Breeds

Chihuahua breeder Jennifer Smolarz of Chesterfield, Mich., who breeds under the Whisper prefix, began breeding the toy breed four years ago after a decade of fostering rescue Chihuahuas. In record time, she finished a stunning bitch from the Bred By Class at the 2007 Chihuahua Club of America National Specialty.

The win was a dream come true, but for Smolarz it was even more poignant considering that CH Amberleigh N Whispers She's All That ("Laney") nearly died at 8 weeks of age. "She should have been happy and alert, but instead she was listless, not eating or drinking, and just wouldn't get up," recalls Smolarz. "I knew something was wrong, but I wasn't sure what to do."

She called one of her mentors who helped her get started in breeding and described the puppy's condition. "She knew exactly what was happening and told me to give Laney sugar water," Smolarz says. "After about 10 minutes, Laney began coming around, but she wasn't really back to normal until the next day."

Smolarz shivers to think what could have happened if her mentor had not been home that day. "Toy and small-breed dogs can die very rapidly from hypoglycemia," she says.

Stacey Amirov of Providence, R.I., agrees that hypoglycemia can quickly become an urgent health condition in toys and small breeds. Another newcomer to breeding Chihuahuas, Amirov breeds under the Starsen Chihuahua prefix. One of the first Chihuahuas she bought was Cam's Lucille's a Ball of Starsen ("Lucy").

"Lucy's first breeding produced three puppies that are finished champions, and four from a second litter are waiting in the wings," Amirov says.

Similar to Smolarz's Chihuahua Laney, Lucy had a hypoglycemic attack as a 12-week-old puppy, when Amirov was picking her up at the airport. "When I got her out of the crate, she was happy and active, but I noticed her stomach, lips and ears were tinged blue," Amirov says. "Lucy had flown

from Dallas to Boston. It was too much for her. I knew right away she was going into sugar shock."

Having read about low blood sugar shock, or hypoglycemia, prior to buying Lucy, Amirov knew what she had to do. She left the airport and bought a palatable, high-caloric supplement for animals.

"Lucy came back pretty quickly," says Amirov. "If I had waited, I could have easily lost her from this."

Hypoglycemia is a condition that mostly affects toy and small-breed dogs. Many toy dog breeders are aware of hypoglycemia, but few understand what happens physically when a dog has low blood sugar, or glucose.

Understanding Hypoglycemia

"In a nutshell, the brain can only use glucose for energy," explains Margaret Casal, D.V.M., Ph.D., assistant professor of medical genetics at the University of Pennsylvania School of Veterinary Medicine. "If glucose levels drop in the blood, then there is less energy for the brain, which causes neurological signs such as disorientation, tremors and coma."

"Normally, glucose is stored in the form of glycogen in the body, and when necessary, hormones stimulate the breakdown of glycogen to supply the brain and other tissues with fuel," she continues. "Sometimes in toy and small breeds the process does not occur quickly enough and hypoglycemia begins to kick in."

Juvenile hypoglycemia, which occurs in puppies less than 3 months of age,

is particularly common in toy breeds. Because puppies have not fully developed the ability to regulate blood glucose concentration and have a high requirement for glucose, they are particularly vulnerable. Stress, cold, malnutrition and intestinal parasites may also trigger juvenile hypoglycemia.

"I am absolutely positive that many Chihuahuas die from this condition each year," says Smolarz.

"An animal that goes a prolonged period without glucose may eventually slip into a coma and possibly die," Casal says. "In toy and small-breed dogs,

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MARGRET CASAL, D.V.M., PH.D., ASSISTANT PROFESSOR OF MEDICAL GENETICS AT THE UNIVERSITY OF PENNSYLVANIA SCHOOL OF VETERINARY MEDICINE

that timeframe is greatly reduced when compared to larger dogs."

Among the signs of hypoglycemia are loss of appetite, extreme lethargy, lack of coordination, trembling, muscle twitching, weakness, seizures, and discoloration of skin and gums.

"They usually act like they are drunk," says Amirov. "They may be lethargic, shivering or refusing to get up and play. Most won't eat or drink. If you know your puppies well and they are acting out of the ordinary, there's a very good chance they are going into low sugar shock. A simple case of hypoglycemia is often due to overactivity combined with too much time between meals."

"After a dog has crashed due to hypoglycemia, I follow up with a protein-rich food, such as a canned puppy food, to help stabilize the blood sugar and prevent another crash," she says. "If a dog doesn't

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Signs of Hypoglycemia

- Loss of appetite
- Extreme lethargy
- Lack of coordination
- Trembling
- Muscular twitching
- Weakness
- Seizures
- Unusual behavior
- Dilated pupils
- Stupor or coma

Hypoglycemia

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stabilize and continues to have difficulty after being given glucose, then I take him to the veterinarian. However, during a hypoglycemic attack, time is of the essence."

Experts recommend rubbing syrup on a dog's gums, dabbing sugar water on or under the tongue, or giving a concentrated solution of glucose to offset the drop in blood glucose. Providing a simple sugar solution and hydrating liquid are key.

"It also is imperative to keep them warm," Smolarz says. "I put a kitchen towel in the microwave for 30 seconds. I shake it out and wrap the puppy in it to bring up his body temperature. Low blood sugar can cause hypothermia, so I get them warm first.

"Next, I give the puppy a teaspoon of honey and wait a few minutes. If the puppy seems to be getting better, I follow up by giving small amounts of warm sugar water over the next few minutes."

Measures to prevent hypoglycemia include feeding puppies and small dogs three or four times a day. A high-quality, nutritious dog food is important in helping to sustain a dog. Owners also should provide a warm environment.

Smolarz crates puppies and adult dogs when they are fed to ensure they eat. "This also helps to prevent the litter bully from stealing everybody else's food. When they are that small, you have to be sure they have enough to eat. I make sure they have kibble to eat freely, and I feed puppies three to four meals a day until they are 5 months old."

Possible Genetic Link

In veterinary medicine, little has been written about hypoglycemia. "Some believe there are critical enzymes in the liver working in concert with glucose-mobilizing hormones that are not fully developed in the toy and small-breed puppy until they are older," Casal says. "In reality, a true cause for toy breed hypoglycemia has not been determined. The literature suggests there is a problem with the storage and breakdown of glycogen.

"There is no scientific evidence proving that hypoglycemia is hereditary, but we always say that if you have a disease that is frequently seen in one or more dog breeds, there usually is a genetic basis," Casal says. "It is possible that hypoglycemia developed because it was linked genetically with a desirable trait."

In contrast to the hypoglycemia experienced by Lucy and Laney, Casal says the disorder may occur secondary to other conditions. Other causes include fasting before vigorous exercise or hunting dog hypoglycemia. Addison's disease, an endocrine disorder causing weakness, vomiting, diarrhea and

UNTIL MORE INFORMATION IS KNOWN ABOUT THE CONDITION, BREEDERS ARE ENCOURAGED TO PROACTIVELY LOOK FOR SIGNS OF HYPOGLYCEMIA IN THEIR CHIHUAHUA PUPPIES SO THEY CAN TAKE STEPS TO HELP THEM BEFORE IT IS TOO LATE.

collapse, may lead to hypoglycemia. Insulin-producing tumors of the pancreas, severe liver disease and glycogen storage diseases are other possible causes.

In dogs that develop chronic hypoglycemia, a veterinarian is likely to conduct a complete medical history and physical examination to determine hypoglycemia. Other tests include a complete blood count, blood glucose concentration, urinalysis, routine biochemistry and blood insulin concentration. An ultrasound may be taken of the abdomen to try and identify a pancreatic or other type of tumor that could cause hypoglycemia.

Treatment may consist of giving glucose orally or intravenously to help increase the blood glucose concentration. If an underlying illness causes hypoglycemia, veterinarians first treat this condition.

Puppies and adult dogs that appear to be in a stupor or coma during a hypoglycemic attack should immediately be given sugar water or an oral concentrated solution of glucose, such as corn syrup or Nutri-Cal. Owners of toy breeds should be sure to have a glucose source readily available.

"Make no mistake these little dogs' brains are being deprived of fuel (glucose)," says Casal. "You have to act very quickly. In an emergency situation, one should dab sugar water on or under the tongue. The sugar is absorbed directly through the tissue into the bloodstream."

Until more information is known about the condition, breeders are encouraged to proactively look for signs

of hypoglycemia in their Chihuahua puppies so they can take steps to help them before it is too late. "Breeders also should include information about hypoglycemia in packets they send with puppies going to new homes," Casal says. "Sharing information is very important and could save a dog's life."

"It is not always easy to detect if you've never seen it before," Amirov says. "Once you've seen it, you'll know in an instant. The trick truly is acting quickly to save your puppy."

Smolarz agrees. "You can't panic. You just have to be there. Being prepared and watching carefully after they've just been weaned or wormed can help save their lives. Vigilance pays off."

She also never ships dogs under 2 pounds. "As a rule, I would never ship a puppy under 2 pounds regardless of his age," she says. "Prevention and cautionary steps are best with toy and small-breed dogs prone to hypoglycemia." ■

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