Transcript:

“Liver Shunts”

Hi, this is Dr. Karen Becker, and today we’re going to discuss liver shunts. Most of you are probably aware that the liver is an amazing organ. It does a whole host of things. It’s a giant filter that removes blood-borne toxins. It synthesizes and distributes proteins. It stores sugar in the form of glycogen for your pets to be able to rapidly use. The liver is this phenomenal organ, but it requires a pretty consistent blood flow to and through it to do its job effectively.

Liver shunts mean that the blood flow to and through your liver has been compromised. There are two major types of liver shunts: intra hepatic (inside the liver) and extra hepatic (outside the liver). Dogs typically develop more liver shunts than kitties, however, cats can also develop liver shunts – it’s just more common in dogs.

How Liver Shunts Occur

This condition develops while the pet’s body is forming inside the mother. Dog fetuses in their moms’ uterus require the help of the mother’s liver for detoxification. Believe it or not, all puppies early in their embryonic development don’t have a functional liver. Toward the end of gestation, the liver does become functional. But in the beginning stages of gestation, there’s a naturally occurring liver shunt that delivers blood through the dog’s liver directly back to the heart. The mother’s liver is carrying the detoxification burden for both the developing fetus and herself.

Ductus venosus, the liver shunt that occurs as puppies are developing in utero, are supposed to close shortly before birth and enable the puppy to be born with a functional liver. If the ductus venosus doesn’t seal close before birth and the puppy is born with a shunt that is still open (called patent ducus venosus), the puppies are born with this intra hepatic liver shunt.

An extra hepatic liver shunt occurs when there’s just plain genetic anomaly. This means that the blood flow to the liver is rerouted around the liver versus the blood flow going through the liver. The extra hepatic shunt also happens in utero when the puppy is developing.

Signs and Symptoms

Signs and symptoms that your puppy may have a liver shunt are symptoms that the liver isn’t doing its job, which is to: (1) distribute protein so pups can grow adequately and have functional nutritional response, and (2) for detoxification. Puppies show symptom of toxicosis, which means there could be central nervous system depression, stupor, vomiting, diarrhea, and lethargy. In worst-case scenario – because detoxification is not happening, and blood-borne
toxins cross the blood-brain barrier – puppies can have seizures and significant central nervous system signs.

The second symptom that’s really most notable early on is that puppies fail to thrive. They have poor muscle tone, don’t grow adequately, grow small, tend to sleep a lot, and just don’t look like they’re developing like the rest of the litter. Those are the two common symptoms after birth that the puppy could be dealing with a liver shunt.

Prone to intra hepatic shunts are larger dogs: Australian cattle dogs, labradors, Australian shepherds, Old English sheepdogs, and samoyeds. Extra hepatic shunts most commonly occur in smaller dogs – hands down, the yorkies. Yorkshire terriers are incredibly commonly dealing with liver shunts. Other small-breed dogs include Maltese, doxies, Jack Russell, shih tzu, lhasa, Cairn terrier, and poodles.

**Detecting Liver Shunts through Blood Work**

The diagnosis of liver shunts can be difficult. If the puppy is born incredibly small, fails to thrive, doesn’t gain weight, and exhibits central nervous system signs, it could be a tip-off. But oftentimes in smaller, mild cases where the shunt is not too significant, it can be difficult to diagnose. There are some keys and tips on basic blood work that can point to the fact that your dog could be dealing with a liver shunt. The BUN or blood-urea-nitrogen (a kidney measurement) can be actually low, as well as albumin, a type of circulating protein. Liver enzymes such as ALT and AST can be elevated. Those are liver damage enzymes.

The real key on traditional blood work that shows that your pet could be dealing with a liver shunt is a liver function test called bile acids. Bile acids are naturally produced in the liver and are stored in the gallbladder. They’re secreted by the gallbladder to help your pet process fat. They’re absorbed back to the small intestine and recycled back to the liver. If the liver doesn’t have the blood flow to be able to recycle bile acids, then bile acid values are incredibly high in blood work. Traditionally through most labs, bile acid values are less than 20. Oftentimes you can get an idea that your pet’s suffering with a shunt when her bile acids are over a hundred.

One of the reasons that I require pre-anesthetic blood work at Natural Pet and one of the reasons why you should demand that your pet’s internal organ function be checked prior to anesthesia is because veterinarians that spay and neuter dogs at 6 months of age assume there’s no need to check organ function in such a young animal. Sometimes it can be a rude awakening that there could be a liver shunt when it takes your dog two or three times the amount of time to recoup from anesthesia. The liver is the organ that has to process that anesthesia. If your dog’s liver doesn’t have adequate blood flow, there’s no processing of that anesthesia. That’s an unfortunate way to figure out that your dog has a liver shunt. Checking blood work prior to anesthesia is a much more proactive approach.
So we would recommend that you do that not just for puppies undergoing anesthesia for the first time. Annually you need to make sure that your dog’s liver function is adequate to be able to handle any anesthetic risk.

**Additional Diagnostic Tests**

The only definitive way to tell if your dog is dealing with a liver shunt and to know if it’s intrahepatic or extrahepatic would be some additional diagnostics: MRI, CT scan, portography (which is looking at the blood flow of the liver), ultrasound, or exploratory surgery. The only time I would tell you to spend the extra money and consider doing some of those additional diagnostics is if your dog’s quality of life is clearly not okay. If you unfortunately have a puppy with central nervous system signs or that is not growing adequately, you are backed into the corner of considering some of these further diagnostics. This is especially true if quality of life is continuing to unravel and you’re faced with the possibility of euthanasia.

These additional diagnostics point out to veterinarians exactly what the problem is so you can consider surgery. Surgery is really the best option for many shunt cases. Unfortunately, intrahepatic shunts have a less successful prognosis. They’re difficult to fix surgically and they have more secondary complications post-surgery.

Extra hepatic shunts can be easily remedied. Other than being born with a perfect liver, it would be your dog’s next best option if indeed he has clinical symptoms. This means you need to act to be able to preserve your pet’s quality of life. Doing shunt surgery is an option for you.

**Managing Liver Shunts in your Dog**

If you know that your dog has a liver shunt but your dog’s acting fine and looks great and you would never know that your dog’s having a problem other than your proactive veterinarian identified it on blood work, there are some great things you can do to help medically manage dogs that have liver blood flow impairment. There are some great neutraceuticals you can consider adding in – SAM-e, acetyl methionine, milk thistle and dandelion are all great neutraceuticals and herbal compounds that help the body detoxify itself.

There are also some great homeopathic and Chinese herbal medications that do a great job of helping the blood to detoxify itself.

The other thing that I want you to consider is looking at nutritional therapy. It’s important to recognize that dogs, being carnivores, need to eat protein to sustain life. Liver, the organ that processes this protein, is dramatically impaired. So you do have to reduce protein intake. It’s important that you recognize that you can’t eliminate protein in a carnivorous diet, or your dog
will have major problems with hypoproteinemia. But you do have to feed a reduced amount of protein.

The protein that you offer a dog with a liver shunt has to be excellent quality. I recommend human-grade meat. A smaller amount of human-grade, preferably organic, clean, preferably raw meat is the best foundational part of the diet you can offer your dog with a liver shunt. Part of my frustration with many of the commercially available liver diets on the market is that although they do contain lower protein, the quality of protein is terrible. It’s still rendered, difficult to process, and not bioavailable because of the quality.

My favorite diet for animals that are dealing with hepatic impairment or liver shunts is a homemade diet. You need to partner with a pet nutritionist because it’s important that it’s not only low protein, but also meeting your pet’s nutritional requirements in terms of vitamins, minerals, antioxidants, and fatty acids. The diet does have a reduced amount of minerals because we know that bladder stones are incredibly common in dogs that have liver shunts. We have to do what we can to reduce the incidence of bladder stones, as well as additional kidney stress.

By partnering with a pet nutritionist to create a balanced, lower-protein homemade diet, many of these animals can go on to live a happy life despite the fact that they have a congenital birth defect that prevents their liver from being 100 percent normal. By partnering with a holistic or proactive veterinarian, you would be able to account for your pet’s well-being throughout the process of helping your pet cope with a less-than-100-percent-functional liver.