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# How Prevalent is Liver Disease?

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By Kay McGuire, DVM



**A**s Health Chair of the WHWTCA and

VP of Health of the Westie Foundation, I receive many emails and telephone calls questioning Westie liver disease and copper toxicosis. Two years ago we lost a 5 year old dog to chronic active hepatitis post gastratomy for a swallowed Nylabone. Izzy was a healthy dog until he decided his new Nylabone was definitely worth eating. He had routine surgery to remove the foreign body and then had trouble healing. He presented back to the clinic for another surgery which was performed to evaluate his discharge from his abdominal incision. The incision site in the stomach wall was closed but he had developed an intra abdominal abcess which was cleaned up and antibiotics changed.

Izzy was owned by two physicians, one an Infectious Disease Specialist and the other a Pathologist. His owners were very supportive but obviously concerned. He was transferred to Gulf Coast Animal Specialty

practice in Houston where they proceeded with expert care including parenteral nutrition. Izzy died of chronic active hepatitis. His copper level was over 3000.

At this time I was obviously not only upset to lose a very special dog but also to consider what implications this had about my breeding program. The clinicians at Gulf Coast did their best to assure me that the copper level was secondary to the hepatitis, not the cause. I of course, being the “Westie Specialist” was not so sure. I proceeded to biopsy the littermate, mother, half sister etc. I also had several other Westies in the practice that had liver biopsies. All biopsies were submitted for histopathology and a fresh chilled sample was overnighted to Colorado State Diagnostic Lab for quantitative copper levels.

My data showed copper levels from under 300 to 2500. All dogs were clinically normal. All dogs had very normal Alanine transferase, primary liver enzyme (ALT) levels. There was no correlation between ALT and copper numbers. I wish to thank fellow WHWTCA member Sandy Crawford and Dr. Larry Thornburg for their

help and sharing knowledge on their research and publications.

Dr. Thornburg, from the University of Missouri, is one of the premier experts on liver disease. The work that Sandy and Dr. Thornburg did in the 1980’s included over 300 Westie liver biopsies. The copper values in this study ranged from less than 100 to 3500 parts per million (ppm) dry weight (dw) and none were sick. The highest copper value he recorded in a Westie was 6500 ppm dw.

The conclusion of Dr Thornburg’s work, copper levels under 400 ppm dw is considered normal. It takes values above 2000 ppm to cause any toxicity, if it does. Dr Thornburg answered me:

*“Kay, in my opinion, (and I am part of the cause), the copper issue in Westies is not near the concern that breeders generally believe. Inheritance has not been proven (although I know it is not diet--has to be inherited!!!). Limited breeding experiments that I carried out were not informative. I used a Beagle bitch bred to a Westie with 3500 ppm dw. There were 2 male pups and 1 female pup. As I recall (data have all been discarded), the copper*



levels in all three pups were minimally over 400 ppm dw. When two of the pups were bred, none of their eight puppies had elevated liver copper. I could not reach any conclusions based upon these results. However, I have seen that copper levels above 400 ppm dw are kennel related and some elevated lines were traced back to specific stud dogs. *I will admit that I am at a loss as to what to tell Westie breeders after looking at 500 to 600 Westies and hundreds of liver biopsy samples from other breeds. I think it will remain a confusing issue until the gene is found and the function of the protein decided.* Regarding Chronic Active Hepatitis. I have found only one mother-daughter connection."

Over the last 1.5 years my conclusion based on the limited data I have collected, the Westie may have an increased incidence of immune mediated chronic active hepatitis. By the time the dogs are clinically ill, the copper values are high. By the time they have an increased ALT (Alanine transferase, primary liver enzyme), they have advanced disease. I would be willing to bet that if we start biopsying our dogs by a year of age, we would be surprised at the elevated copper numbers we would find. I think there are many dogs living very normal lives with values as high as 1500-1800 ppm dw.

The decision is now what to do. If we are running routine lab work at least annually starting with dogs at a year of age, you may notice subtle elevations of ALT and be able to biopsy to determine the degree of hepatitis and begin earlier treatment. Binding the copper and chelation therapy to reduce the copper can be started to help detoxify the dog. I have performed three biopsies on one of my bitches. The latest histopathology came back very good but the copper level was 2850 ppm dw. I will start Zinc to bind the copper.

If you are not inclined to do routine biopsies on your young dogs, please consider adding

a biopsy with a routine spay. It is really a very easy and safe procedure. A small sample of fresh liver can be sent on ice to Colorado State Diagnostic Lab for a quantitative copper level. It would be quite helpful to the Westie health to gather this information again 20 years after the initial study.

If you have questions or testimonials, please contact me at [kmcscash@aol.com](mailto:kmcscash@aol.com). All information will be held confidential if requested. Please check out the e-book on [www.westiefoundation.org](http://www.westiefoundation.org) for the chapter "Liver Disease and Copper Toxicosis." Watch for follow-up information in future issues.

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