

"This Miserable Thing"

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For generations Lhasa Apsos and Shih Tzu have fallen victim to a serial killer - hereditary kidney dysfunction. More than 50 years ago, the late Marie Stillman (America's Lhasas) referred to it as 'this miserable thing.' Now we finally may have the key to eradicating this killer from our two breeds.

Hereditary kidney hypoplasia (HKH) - also known as hereditary kidney dysfunction (HKD) and hereditary renal dysfunction (HRD) - has for years afflicted most established lines of Lhasa Apsos and Shih Tzu. Unlike kidney failure, in which normal kidneys succumb to disease, HKH is characterized by failure of the juvenile kidney cells to mature normally (at age 8 - 10 weeks). Hypoplastic kidneys never fully function. The best advice that could be offered was that afflicted dogs and their offspring not be bred.

Early cases of HKH were misdiagnosed as diabetes insipidus because the excessive thirst of afflicted puppies mimics that disease. Besides excessive thirst, symptoms of HKH include frequent urinations, dilute urine, protein in the urine, lethargy, and vomiting. The most challenging aspect of HKH diagnosis is determining the degree of affliction, which ranges from severe to very mild without symptoms. Standard urinalysis tests are of limited value because abnormal results are obtained only when kidney function is 25 percent of normal or less. To date, the only test capable of identifying the presence of HKH in all degrees has been a surgical wide-wedge kidney biopsy. But the biopsy does not identify dogs with normal kidneys who are genetic carriers. It's been hoped that carriers could be identified by breeding results.

For decades breeders pursued veterinary research and spent large sums of money vainly seeking noninvasive and reliable tools for definitive diagnosis of HKH. Meanwhile, a very determined Lhasa fancier whose dogs were struck with HKH fought back. Debby Rothman, of Colorado, embarked on a mission to create a database of afflicted and clear dogs from within her own lines. Each dog was surgically biopsied, revealing some previously unrecognized mild cases of HKH. Pedigrees, lab results, and breeding records were crossmatched.

Two years ago the American Lhasa Apso Health trust and the American Shih Tzu Club jointly funded research in HKH by Dr. Mary Whiteley. As the foundation of her work, Dr. Whiteley relied on the information Rothman has amassed. Working feverishly, Dr. Whiteley discovered first one genetic mutation, then a second, that she is confident are markers for the disease. (The second mutation was a surprise, and is found only in puppies who die of HKH prior to 12 weeks of age.)

Dr. Whiteley has said that sequencing the genes for HKH was particularly challenging and frustrating. Without access to the pedigrees and screening compiled by Rothman, she would not have been able to make the progress she did. The cooperation of many other breeders who have donated cheek-swab DNA samples and pedigrees of Lhasas and Shih Tzu who are afflicted with HKH, or have produced or are relation to afflicted dogs, has been invaluable in validating the research results.

We are optimistic that soon we will have a simple DNA marker test for afflicted and carrier dogs. The rest will be up to breeders. As Marie Stillman wrote when she chronicled the history of her breeding experience with *this miserable thing*, "Only fools give advice, and wise men take it."