Renal Dysplasia

GPCA Approves new DNA Test for CHIC eligibility

by
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Chronic Kidney Disease in puppies is also described as Renal Dysplasia (RD). It has been identified in more than 30 breeds of dogs including Pyrs, (1) , but until recently was not considered a concern by Pyr breeders. In 2002, a Pyr pup became ill shortly after being delivered to the buyer. Kidney failure was diagnosed and, despite the best of care, it died within the year. Since the rest of the litter appeared healthy, this was considered an isolated incident by the vet, the buyer and the breeder.

Six years later, another affected pup turned up from the same breeder and died at six months of age. Although this was also considered an isolated incident, the owner and breeder were willing to discuss the case with anyone who asked. Within the next two years, two more breeders identified affected pups. One of them contacted DOGenes, Inc. of Canada and began submitting blood samples from the affected pups, their parents and siblings, to lay the basis for future DNA work.

Since not all affected pups show severe symptoms, identifying them depends on close observation by the owner and cooperative testing by the pup's veterinarian. Here are the symptoms to look for.

- Drinking excessive water.
- Difficulty in housebreaking – pup pees frequently and urine is light-colored with little odor.
- Poor appetite, though this may be intermittent.
- Slower growth than that seen in littermates.

Veterinary examination in early stages may only find urine with a low specific gravity (dilute urine). Other findings may be protein in the urine and elevated arterial blood pressure. Ultra-sound examination may or may not identify one or both kidneys as smaller than normal.

As the pup loses up to 75% of its kidney function, the Blood Urea Nitrogen (BUN) and creatinine rise significantly. At this point, the pup may be found to have lost significant muscle mass and there may be bony enlargement of the mandibles. Ultra-sound of the kidneys at this point may show abnormalities.

As the disease progresses, pups may show hyperparathyroidism, which causes the bones to soften,

leading to skeletal changes that resemble rickets – deformed legs, roached back, swollen jaws. In one litter, a severely affected pup at 8 months weighed 25 pounds, a less severely affected sister 65 while their normal littermates were close to 90 pounds.

A mildly-affected pup may continue to grow and show few symptoms. Even ones with elevated BUN and creatinine levels can often be maintained on a diet formulated for kidney disease, usually with the addition of pepsid and phosphorus binders. According to Larry Cowgill, DVM of University of California, Davis, many pups born with renal dysplasia do better than dogs who acquire kidney disease later in life. He said that these puppies are able to plateau until a small insult occurs, then they decompensate. (2)

The genetic basis for RD in Great Pyrenees is not definitively known at this point, other than it is a heritable disease. In the 1970's, it was believed to be recessive in Standard Poodles. However, recent studies in Shih Tzu and Lhasa Apso dogs indicate the genes may be "dominant with incomplete penetrance". Over a ten year period, a group of Shih Tzu breeders carried out matings based on kidney biopsy results, but the results proved inconclusive. (3) It is highly likely that the development of a DNA test will be the best hope for eliminating this disease by selective breeding based, not on symptoms, but on genetics.

If you have a Great Pyrenees pup that may be affected with RD, or currently own one of the parents or siblings of an affected pup, go to http://www.dogenes.com/ for further information and to order a DNA test kit. The present cost of testing is $130.

In 2014, the GPCA approved Renal Dysplasia as one of the DNA tests that qualifies as an option for a CHIC number. The disease is not confined to any one kennel, or any one part of the country. The existence of a DNA test gives Pyrenees breeders the opportunity to identify carriers and to work toward eliminating it in their breeding program.

Pyr owners wanting further information can contact Catherine de la Cruz at cdlcruz@sonic.net.

References:

1. Veterinary Pediatrics Dogs & Cats from Birth to Six Months, 1995 ed, pp 401-410 (J.D.Hoskins, ed) W.B Saunders, Philadelphia, CA

2. http://www.vetprof.com.clientinfo.poodlerenal.html Renal Disease in Standard Poodles, Susan L Fleisher (1996)

3. http://www.vin.com/proceedings/Proceedings.plx?CID=WSAVA2003&PID=6602&O=Generic 28th World Congress of Small Animal Veterinary Association , Renal Dysplasia in Shih Tzu Dogs, Kenneth C. Bovee, DVM, M Med Sc, University of Pennsylvania, Philadelphia, PA

RD Affected pup and normal littermate at 10 mos