"Tala," a singleton Siberian Husky puppy, was only 2 weeks old when breeder Jessica Breinholt of Coalville, Utah, realized the puppy always left a wet spot on her clothing when she held her.

“Tala’s rear end was always wet partly because her dam was always cleaning her,” Breinholt says. “The skin on the inside of her hind legs became inflamed because she was literally leaking urine.”

Incontinence is not a problem one would associate with a puppy, but ectopic ureter(s) (EU) is the most common cause of urinary incontinence in young female dogs. EU is a congenital anatomical abnormality in which one or both ureters bypass the bladder and empty directly into the urethra, the tube that carries urine from the bladder to the outside of the body or reproductive structures.

As a result, the urinary sphincter, which holds urine in the bladder, may be inappropriately developed and not completely functional, causing a dog to constantly dribble urine. Normally, urine collects in the bladder until it is full, which makes a dog feel the urge to urinate. Some dogs, though not all, may urinate normally despite having the condition and being incontinent.

Ectopic ureter can cause several problems. For example, incontinence

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Siberian Husky Puppies May Inherit Benign Familial Hyperphosphatasemia

Siberian Husky puppies and children under the age of 5 share a predisposition for a condition known as benign familial hyperphosphataesemia (BFH). An unfounded spike in their blood alkaline phosphatase (ALP) is the telltale sign. Blood ALP is an enzyme that comes from various tissues but predominantly from the liver and bones.

The culprit of this age-related disorder is genetics. Among those affected, both puppies and children inherit high ALP from their parents. Children with BFH may have ALP values three to 50 times higher than unaffected children their age. Likewise, affected Siberian Husky puppies could have ALP values more than five times higher than normal.

Fortunately, the condition appears to be harmless, and dogs and children eventually “outgrow” high ALP. In the meantime, recognition of the disorder is important.

When dogs are sick, blood testing can be used to help determine the cause. When the ALP level is elevated, it could indicate bone cancer, Cushing’s disease (hyperadrenocorticism) or liver conditions. It also could be a normal reaction to steroid medications.

ALP is an enzyme synthesized by the liver and osteoblasts in bone; elevations in blood ALP can indicate a problem, but it is not very specific. Elevated ALP is one of the most common abnormalities detected on the blood chemistry profile of dogs.

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interferes with housetraining and, as with Tala, can cause urine scalding of the skin. Infections of the urinary tract, bladder and kidney are common.

Mary McLoughlin, DVM, MS, DACVS, associate professor at The Ohio State University College of Veterinary Medicine, says, “Most cases are noticed when a puppy leaks urine on his or her bedding, sits on laps or constantly licks its genitals. More than half of affected dogs also have a bladder infection.”

Owners of dogs diagnosed with EU come from across the country to have their dogs treated by McLoughlin. “The majority of my EU patients are young female dogs,” she says.

In addition to the Siberian Husky, affected breeds include the Entlebucher Mountain Dog, Golden Retriever, Labrador Retriever, Newfoundland, Poodle, and Soft Coated Wheaten Terrier. Because related dogs may be affected, a genetic disposition is suspected.

**EU Treatment Process**

The gold standard diagnostic tool for determining whether a dog has ectopic ureter is cystoscopy. During the procedure, a veterinarian uses a fiber optic instrument called a cystoscope that is equipped with a tiny camera to carefully examine the lining of the urinary bladder and the urethra.

Another diagnostic tool is intravenous pyelogram (IVP), in which a contrast agent is injected intravenously to optimize visualization of kidneys, ureters and the bladder on radiographic images. The use of a computed tomography scan with a contrasting agent further increases the accuracy of diagnosis.

“I often use a combination of cystoscopy and IVP to diagnose the condition,” says McLoughlin.

Before resorting to surgery, most veterinarians prescribe phenylpropanolamine (PPA) medication to help tighten the sphincter muscles around the bladder neck and thus aid the bladder in retaining and controlling urine. “PPA is seldom a panacea for EU since the opening usually occurs beyond the bladder sphincter, but it is worth trying because in a few dogs it may resolve the problem,” McLoughlin says.

A minimally invasive surgical procedure introduced in 2006, cystoscopically-guided laser ablation (CLA) is highly effective, especially for females with the most common EU defect in which the ureter enters but does not fully penetrate the bladder wall. This causes tunneling within the wall that opens to the urethra. The outpatient CLA procedure is often performed in combination with diagnostic cystoscopy. “CLA has a similar or slightly better success rate than traditional surgery and with fewer complications,” says McLoughlin. “Traditional surgery involves repositioning the ureter to open in the bladder.”

Every case is different, she says. “I usually start with the laser ablation procedure and then wait one month for the inflammation to resolve. If the dog is still dribbling, we try a course of PPA to stimulate tightening of the muscle at the base of the bladder. If that doesn’t work, we use an external urethral occluding device.”

Commonly known as a silicone cuff, the urethral occluding device is placed below the bladder neck with a tiny tube running from below the bladder neck to a port just under the dog’s skin or the inner flank. Initially deflated, the cuff is gradually inflated as saline is injected through the port, thus exerting pressure on the urethra.

“The saline is adjusted to obtain enough pressure to achieve continence but not so much as to cause blockage or straining,” McLoughlin says. “The combination of laser ablation with the occluding cuff yields the highest success rate.”

“If a dog still isn’t continent after three weeks, we add more saline through the port. The cuff inflation is done without sedation. Most dogs need fine-tuning of the cuff in subsequent visits. It is important for the veterinarian to be sure dogs can urinate without straining. If they can’t, some saline is removed.”

**Genome-Wide Association Study**

Because Tala was a singleton puppy and EU had not been reported in any of her relatives, Breinholt had no indication the condition could be hereditary. She bred Tala’s sire to a female unrelated to him or to Tala’s dam. “By the age of 5 weeks, it was painfully clear that two of the female puppies had EU,” she says. “We were devastated.”

A genetic study underway at the University of California-Davis School of Veterinary Medicine aims to learn more about the pattern of inheritance of ectopic ureter. The study includes Border Collies, Golden Retrievers, Labrador Retrievers, and Newfoundlands. Although Siberian Huskies are not currently part of the collaborative research, the breed could be included if 20 samples from affected dogs are submitted.

Joshua Stern, DVM, PhD, DACVIM, assistant professor of medicine and epidemiology, says, “We are performing a genome-wide association study to identify the regions of the genome likely to contain possible genetic mutations. It is possible the mutation will be unique to each breed or shared among multiple breeds. No one knows how common EU is in Siberian Huskies, but for owners it is devastating. It can be expensive and disappointing to treat and difficult to live with.”

McLoughlin agrees. “Full continence may never be achieved for some dogs despite every effort to treat them. Dogs with this condition require lifelong maintenance. Something as simple as a urinary tract infection can push a dog over the edge into incontinence.”

Purina appreciates the support of the Siberian Husky Club of America and particularly Sheila E. (Blanker) Morrissey, DVM, SHCA genetics chair, in helping to identify topics for the Purina Pro Club Siberian Husky Update newsletter.
Veterinarians should consider the age of a dog when evaluating the significance of elevated ALP,” says Michelle Kutzler, DVM, PhD, DACT, associate professor at Oregon State University. “In healthy young puppies, ALP values can be up to four times higher than in adult dogs. In the first week, they are higher due to the dam’s colostrum. Rapid bone growth in puppies contributes to the elevated bone-derived ALP level.”

ALP levels normally peak when puppies are around 3 months of age, and then gradually decline until they are in the normal range around 15 months of age. Giant-breed puppies may not reach the normal adult range until they are 2 years of age. “When blood testing shows that a Siberian Husky puppy has elevated ALP, it raises suspicion that the dog could have a possible liver- or bone-related illness,” Kutzler says. “Many veterinarians may not be aware that some healthy Siberian Husky puppies have an unusually high ALP level.”

A study conducted by Purina scientists examined BFH in 42 related Siberian Husky puppies from eight litters. Puppies with high ALP activity were evaluated at 11 and 16 weeks and compared with their unaffected littermates and other unaffected Siberian Husky puppies of the same age.

The evaluations included:
- biochemical analyses, including electrolytes and isoenzymes of alkaline phosphatase
- ionized calcium concentration
- blood parathyroid hormone concentration
- diet, growth and health performance
- skeletal radiographs
- pedigree information

Although 17 of the 42 puppies tested had markedly high ALP values, they had no other abnormal findings. The mean total ALP activity of these affected puppies was more than five times greater than that of the unaffected puppies. “These extremely high ALP values would cause concern for the puppies’ well-being,” Kutzler says. “But these puppies’ growth, clinical health, skeletal radiographs, and other biochemical testing data were normal. The increased ALP in five puppies was attributed to bone origin, but no difference in bone characteristics was detected.”

In dogs, as in people, elevated ALP is believed to have an autosomal mode of inheritance. Elevated ALP values should be evaluated in any dog, but in Siberian Husky puppies, veterinarians should consider benign familial hyperphosphatasemia as a possible cause.

‘Matisse’ Wins Pro Plan Champions Cup

After leading the pack all year, GCH Claircreek Impression De Matisse has won the 2014 Pro Plan Champions Cup by earning 480 points through Dec. 31. The 3 ½-year-old male Portuguese Water Dog, called “Matisse,” was bred by Donna Gottdenker, who co-owns him with Milan Lint and Peggy Helming. Professional handler Michael Scott handles Matisse, who finished second in the 2013 Champions Cup competition. The yearlong Pro Plan Champions Cup award, which is sponsored by Purina Pro Plan brand dog food, is based on points tabulated from Bests in Show and Group placements at more than 200 Purina-sponsored all-breed dog shows. The winner receives a $10,000 cash prize, an original oil painting by dog portrait artist Linda Draper and a keepsake Pro Plan Champions Cup trophy. Take a look and see if you recognize the Top 10 placing dogs.

Upcoming Events

Check out upcoming Purina-sponsored show and sporting events at venues across the country. These events are great opportunities to meet dog enthusiasts, canine experts and Purina representatives.

Want to Reach the Editor?

Have comments about the Purina Pro Club Update? Send them to us at: Purina Pro Club Update, c/o Editor, Nestlé Purina PetCare, 2T Checkerboard Square, St. Louis, MO 63164 or via email at editor@purina.nestle.com.

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