**Mydriatic-Induced Eye Pressure Spikes**

The purpose of this ophthalmology study was to assess intraocular pressure (IOP) in 3 dog breeds (golden retrievers, Siberian huskies, and English cocker spaniels) after administration of 1 drop of the mydriatic tropicamide, often used in dogs because of fast-acting, short-duration effects. Seventy-six dogs ranging in age from 6 months to 12.5 years participated in the study. One third were males and two thirds were females. Before initial IOP measurement, a drop of 0.5% proparacaine (Ophthetic, www.allergan.com) was given for corneal anesthesia. The first IOP measurement was taken using a TONO-PEN XL tonometer (Medtronic Solan, www.medtronic.com). All 3 breeds had an average initial IOP of 14.9 ± 3.2 mm Hg; however, the difference among the breeds was significant, with the huskies having higher IOPs (17.2 ± 3.7 mm Hg).

The tropicamide was then administered, and the dogs had a routine eye examination to ensure normal ocular structures. The IOP was measured the second time 30 minutes after tropicamide administration. These follow-up measurements indicated that the average change in IOP was an increase of 1 ± 4.23 mm Hg; however, there was a subgroup of huskies that had abnormal increases after dilation that ranged from 9 to 17 mm Hg. These data suggest that spikes can occur in Siberian huskies that initially have normal-to-low IOP values; huskies also have the greatest interbreed postdilation variability, and breed-dependence is involved in mydriatic-induced IOP spikes.

**COMMENTARY:** In glaucoma, fluid forms within the eye more rapidly than it leaves, causing a buildup of pressure, which can damage the retina, and if not properly treated, ultimately damage the optic nerve, thereby interrupting impulse flow and causing blindness. The incidence of glaucoma seems to vary among dog breeds; thus, this study was performed to determine whether there was an interbreed variability of any change in IOP following administration of 1% tropicamide. Based on the study results, interbreed variability of canine IOP does occur after administration of this drug, and individual Siberian huskies show dramatic increases. — Perri Stark, VMD, MBA


**Toxic Melamine/Cyanuric Acid Combo**

In March 2007, numerous cases of acute renal failure in dogs and cats were linked to the ingestion of a variety of commercially available dog and cat pet food products. Contaminants present in those pet foods were identified as melamine (marketed as a fertilizer because of its high nitrogen content) and cyanuric acid (structurally related to melamine and used in outdoor swimming pools and hot tubs). The authors conducted a study in cats to characterize the toxicity potential of these specific contaminants, dosed alone and in combination, and to describe any clinical pathologic changes. Results indicated that melamine or cyanuric acid administered alone had no effect on renal function. However, acute renal failure was observed in cats administered a combination of these substances at levels similar to those detected in the pet foods in question. Crystals were present within the lumina of collecting ducts and within distal tubules. The structure of these crystals and their location was the same as those reported in dogs and cats that developed renal failure after consuming contaminated pet food. The exact mechanism for acute renal failure cannot be determined, but the authors indicated that acute intrarenal obstruction appears to play an important role. This study demonstrated that a combination of melamine and cyanuric acid administered orally causes acute renal failure in cats. The lowest dose of melamine and cyanuric acid resulting in renal failure has yet to be determined.

**COMMENTARY:** This superbly illustrated study emphasizes the enhanced toxicity of combined dietary melamine and cyanuric acid as a cause of acute kidney injury (AKI) in cats compared with the relatively innocuous nature of each substance when fed alone. The onset of AKI failure was rapid (within 36 hours) after a single dose of the combination. The crystals that formed in the renal tubules were believed to comprise melamine combined with cyanurate, but this was not proven. While crystals obstructed some tubules, many did not show signs of occlusion; the authors postulated direct toxicity to the tubular epithelium, independent of intratubular crystal formation. Even the lowest dose used in this study (36 mg/kg single dose) caused severe AKI. Further studies are needed to determine the minimal dose that causes AKI. — David F. Senior, BVSc, Diplomate ACVIM & ECVM-CA