Mighty Early Ear Mite Elimination

Ear mites (*Otodectes cynotis*) are a worldwide problem with increased prevalence in kittens and especially cats housed in dense populations. Ear mites are contagious and live not only in the ear canal but also on other areas of the body and in the environment. They can survive off the host for approximately 12 days. This study compared the speed of kill of two compounds known to have efficacy against *O cynotis*: ivermectin and selamectin. Rapid killing of mites could be important in crowded environments like animal shelters. This study was conducted at a busy urban shelter in central Colorado. Cats entering the study had to have clinical signs suggestive of ear mite infestation, be otherwise clinically healthy as well as at least 4 weeks of age, and have live *O cynotis* present in both ears verified by microscopic examination. Cats were housed individually during the study. One group of cats (n = 41) was given 0.5 mL of 0.01% ivermectin otic solution (Acarexx) in each ear as a single dose. The other group (n = 41) was treated with one dose of selamectin (Revolution; 15 mg total dose for cats ≤ 5 lb; 45 mg total dose for cats > 5 lb) applied to the skin. Microscopic examinations were made at approximately 6, 10, 24, 34, 48, or 72 hours after treatment. Both drugs appeared to kill *O cynotis* as early as 10 to 12 hours after a single administration. Use of 0.01% ivermectin significantly reduced the time required to kill 100% of mites as compared with selamectin. *Study funded by IDEXX Pharmaceuticals*

Commentary: Although this study demonstrated that both 0.01% ivermectin otic suspension and topical selamectin have acaricidal properties after 48 hours, the role of ear cleaning in the treatment of *Otodectes* was not considered. Ear cleaning at the time of diagnosis followed by either otic or topical acaricidal treatment provides faster relief to the patient and removes the immature stages present in the ear debris.—*Louis N. Gotthelf, DVM*

Efficacy of a single dose of an otic ivermectin preparation or selamectin for the treatment of *Otodectes cynotis* infestation in naturally infected cats. Nunn-Brooks L, Michael R, Ravitz LB, et al. ***J FELINE MED SURG*** doi: 10.1016/j.jfms.2011.03.003.

Dog-Specific Assay for Insulin

Measurement of canine serum insulin has routinely relied on methods developed to measure human insulin. A canine-specific enzyme-linked immunosorbent assay (ELISA) for measuring insulin has become commercially available, with antibodies, calibrators, buffer, and analytic range optimized for canine samples. Antibodies used in this ELISA recognize both porcine and canine insulin. Unlike human assays, in which results are reported as activity (with units calculated based on activity of the human insulin molecule), the canine ELISA results are reported as weight per volume (ng/L). The objective of this study was to validate the canine ELISA for determination of serum insulin concentration in dogs. Serum samples were collected from healthy dogs and from dogs examined for a variety of illnesses and disorders; most were suspected of having insulinoma. Evaluation steps included determination of intra- and interassay coefficients of variation (CV), recovery after dilution and spiking, assessment of linearity, and biologic response to glucagon. Intra- and interassay CVs were 4.3% to 7.8% and 4.4% to 7.7%, respectively. Mean recovery after dilution was 99% and recovery after spiking with porcine

insulin was 116%. The linearity study supported the manufacturer's claim about the low end of the analytic range (20 ng/L). The range of values measured in samples from ill dogs was slightly higher than the range in samples from healthy dogs, and the highest insulin concentration measured was well below the upper limit of the analytic range (1500 ng/L). Serum insulin concentrations increased significantly after glucagon injection. Results using the canine ELISA were also compared with results using an ELISA for human insulin, and the canine and human ELISAs correlated well. Stability of serum insulin during storage was also determined. Insulin was stable for 30 days in 6 serum samples stored at -20°C and in most samples for 8 days at 4°C to 8°C. Insulin was stable for < 3 days at room temperature (20°C). The results of this study indicate that the new canine serum insulin ELISA had good precision and accuracy and correlated well with the previously used assay.

Commentary: The aim of this study was to validate a canine-specific insulin assay and to assess correlation of this test with the currently accepted human assay for insulin measurement. The justification for use of a newer canine-specific ELISA is to minimize possible inaccuracies in testing due to variation and cross-reactivity of antibodies and to avoid the intrinsic drawbacks of using the human assay for dogs. This study found that the test was reasonably precise, with small variations within and between assays. Excellent correlation was demonstrated between human and canine insulin assays. Suggested uses for this assay include diagnosis of insulinoma and differentiation between absolute and relative insulin deficiency in diabetic dogs. Future studies are needed to establish an appropriate reference range for dogs. It would also be interesting to validate the canine versus human insulin assays in dogs with known insulinoma or diabetes. *—Jennifer Ginn, DVM, Diplomate ACVIM*

Validation of a species-optimized enzyme-linked immunosorbent assay for determination of serum concentrations of insulin in dogs. Öberg J, Fall T, Lilliehöök I. ***VET CLIN PATHOL*** 40:66-73, 2011.

Dollar-Wise Digital Radiography Decision Making

There are many advantages to transitioning to digital radiography (DR), with cost being the single disadvantage. There may be some infrastructure requirements to take into account when determining the cost of making the switch. This paper reviews the different forms of DR, image file formats, supporting equipment and services required for DR, storage of digital images, and teleradiology. DR is a filmless procedure in which the images are displayed on a computer monitor. Workstations to view the images include a computer with digital imaging and communication in medicine (DICOM) viewing software. The cost of these workstations should be factored into the cost of transition. There are various DICOM viewing software programs and the American College of Radiology (ACR) recommends a minimum of the following functions: window and level adjustment, pan, zoom, flip, rotate, and measurement tools. The number of monitors at a workstation is based on personal preference. The monitor used for interpretation of DR should be medical grade. The ACR gives recommendations based on resolution, luminance, and contrast ratio. For example, spatial resolution is described in megapixels (MP) and, while personal computer monitors range from 0.75 to 2 MP, medical grade monitors range from 2 to 5 MP.

Commentary: Transitioning to DR requires a large financial investment but also a lot of homework and research! Be prepared to contact and visit other veterinary clinics to determine which system will work for your setting; do not depend on sales representatives alone. Be cautious about investing in a system based on affordability. The truth is that time will be saved with DR and the number of studies produced will ultimately increase but this is a long-term return. The author advises—and I strongly agree—that you invest in service support from the vendor AND a separate information technology (IT) professional. Expect to encounter new artifacts and a need for help in establishing a new, comprehensive technique chart for DR to maximize image quality. I also highly recommend two medical grade monitors at a minimum of one workstation so that images can be reviewed side by side.*—Jean K. Reichle, DVM, MS, Diplomate ACVR*

Transitioning to digital radiography. Drost WT. ***J VET EMERG CRIT CARE*** 21:137-143, 2011.

FOR MORE

on digital radiography, see **Digital Imaging**. Daniel BG. *Vet Clin North Am Small Anim Pract* 39:667-676, 2009.

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