A VETERINARIAN'S INSIGHT ON CANINE DIABETES MELLITUS

BY ASPEN DAVIDOFF, BVM&S
Associate Veterinarian
Animal Hospital of Newport Hills
Newcastle, WA

March 18, 2019

Canine Diabetes has been known to affect the American Eskimo dog, so we, as members on the Diabetes Committee of AEDCA, want to provide information on signs, diagnostics, and treatment of this disease to understand the importance of early recognition and actions. We are very appreciative and would like to thank our fellow Diabetes Committee member, Aspen Davidoff, BVM&S for this important information, providing us as what she calls "a whirlwind tour of canine diabetes from her perspective".

Signs for the Dog Owner

The most common signs include increased drinking and urination, weight loss, lethargy, and cataracts.

Diagnosing Diabetes Mellitus

The first step for diagnosis is a full panel blood test and, very importantly, a urine test as well. The main diagnostic parameter for diabetes is blood glucose. A raised blood glucose plus an increase in glucose in the urine is diagnostic for diabetes. There is a gray area though, as stress can sometimes raise these artificially. The full blood panel allows the vet to check for other concurrent disease, such as Cushing's disease (hyperadrenocorticism), which often goes hand in hand with diabetes.

The urine test lets the vet see if there is glucose in the urine, a prime way of differentiating between stress hyperglycemia (sometimes stress will cause a temporary spike in blood glucose) and true diabetes. Diabetics, especially newly diagnosed ones, often have a urinary tract infection as well. The urine also lets the vet know if there are ketones in the urine, which is very important. Ketoacidosis is what happens if diabetes isn't treated. It is very common for dogs to present in this state as they are very sick and some of the earlier signs were missed by the owner. The brain must have glucose to operate. If it can't get any, such as in diabetes, it defaults to an alternative metabolic pathway which produces ketones as a byproduct. Ketones are not good at all and make the sufferer feel very poorly. Ketoacidotic dogs often show inappetence, vomiting, dehydration, lethargy, weight loss and weakness. These are very sick dogs and this can be an emergency.

Treatment

Treatment for ketoacidosis involves hospitalization on fluids as the vet tries to get the blood glucose regulated. The vet is trying to flush the ketones out of the body while also trying to bring the blood glucose down to manageable levels using a special type of insulin called regular insulin. It is very fast, but very short acting. The dog has to be monitored very closely. Often, during this initial stabilization, the dog needs both insulin and glucose simultaneously. This is the most dangerous time for the dog and can take several days to sort out.

Treatment and monitoring for uncomplicated diabetes is much more straight forward. Usually the vet will start with a fairly conservative dose of insulin which is given under the skin at the back of the neck as close to 12 hours apart as possible immediately after a meal. Monitoring generally involves rechecking the blood glucose every 1-4 weeks (depending on how things are going) until the correct dose is found. Ideally, the blood glucose should be between 125-200. Blood glucose is ideally checked 4-6 hours after dosing. Once things are stabilized, checks can spread out a lot. Blood glucose curves are very beneficial as well, especially if a dog is being difficult to stabilize. This involves dosing like normal and taking a blood glucose every 2 hours over the course of 8-12 hours to see how they are responding. Owners can learn to check blood glucose levels at home themselves too. I don't like to go more than 6 months between visits with my diabetic clients. Ideally full panels are run every 6 months if things are going well or sooner if something changes. Diet can be massively important too. You want slowly digestible carbohydrates that last a long time. I've had very good result with Purina EN Fiber Balance or even Hills Prescription Diet W/D[1] especially if they are overweight.

Important side note: There are several different types of insulin available. Vets tend to use mostly human forms of insulin as the veterinary licensed ones are often very expensive. For humans, they are all used differently. For veterinary medicine, it is much more species specific. For management of CAT diabetes use the really long lasting version, glargine or prozinc (actually licensed for use in cats). Glargine works best though, but is unfortunately more expensive. For DOGS medium duration insulins are used, either Vetinsulin (licensed version) or NPH insulins such as Humulin-N or Novolin-N (by far the cheapest). NEVER CHANGE TYPES WITHOUT SPEAKING TO A VET. Mostly this is a concern if people want to share their own insulin, never a good idea, but it happens. Also, different insulins use different types of syringes. There will be a number on the bottle, for dogs it is almost always U-100. MAKE SURE THE SYRINGE SAYS THE SAME NUMBER. Cat insulin is most often U-40 (prozinc) but is sometimes U-100 (glargine). Pharmacists are not always up on veterinary information and will sometimes try and swap the version prescribed as they might a human. If something doesn't look the same as the last time you got it, check with your vet. Switching between types can be deadly at worst and expensive at best as you have to start stabilization all over.

Also note that insulin is very delicate. If it is dropped it can become infective. It cannot be left out of the refrigerator for long. Always gently invert it a few times or roll it between your hands before administration, never shake. It also is only supposed to be used once open for a month. It is expensive and realistically can probably be used for longer (no more than 3 months though). If the dog is suddenly becoming unregulated, check when the insulin was opened or just try a new bottle.

Screening

Unfortunately, there are not great options for screening. Diabetes is almost impossible to test for until they are already symptomatic. There is a test called A1C that can be used but it only looks back about 110 days. It can catch some early cases but in order to catch it at the earliest, you would have to test every 3 months. Until recently, this really wasn't financially viable. The test has come down in price and speed in the recent years so this may actually be a viable option now. There is a lot of research going into canine diabetes in general so there may be new treatments and screen tests coming soon.

[1] The suggestion(s) and/or endorsement(2) of any product brands, Purina or otherwise for the management of canine diabetes, does not constitute AEDCA or Dr. Davidoff receiving monetary or any other type of compensation.