

Diabetes In Ferrets

Know the signs, treatment and prognosis for ferrets with diabetes.

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Milo survived happily for a year and a half while suffering three major ailments — adrenal gland disease, pancreatitis and diabetes.

When we think of ferrets, we often think of medical conditions including adrenal disease, insulinoma, lymphoma and a few others that seem to affect quite a large number of our aging ferret population. What we don't often think about, or hear reference to, is diabetes.

What Is Diabetes?

Diabetes, in many ways, is exactly the opposite of insulinoma. Usually, the cells of the pancreas are undersecreting insulin, which allows blood sugar to rise to unacceptably high levels. Sometimes, the cells in the body simply become resistant to the sugar in the blood. Either way, in high amounts, blood sugar essentially acts as a "toxin" to the body — and glucose is "spilled over" into the urine by the kidneys. This results in the animal urinating more than usual and hence, also drinking excessively.

Any diagnosis of diabetes requires two things to be present, an excess of glucose in the blood and an excess of glucose in the urine. This is true for ferrets, dogs and cats — both blood and urine samples are required to conclusively diagnose diabetes. Over time, the excess of glucose starts to affect the brain centers — causing the animal to eat excessively. Finally, the cascade of multiple organ involvement occurs, and the animal may enter what is called "diabetic ketoacidosis." This is a commonly fatal disorder involving virtually every organ of the body.

Is Your Ferret At Risk For Diabetes?

Why does diabetes occur, and how common is it in ferrets? Those are both very difficult questions to answer. We have a lot of information regarding diabetes in other animals, and currently we are extrapolating it out to ferrets — which may or may not be accurate. As most ferret owners know, ferrets tend to do things their own way! However, we do know of a few concrete causes of diabetes that likely affect ferrets.

The first is due to pancreatic destruction. Two common causes for pancreatic damage that may affect the secretion of insulin are insulinoma surgery and pancreatitis. We know that both conditions occur with some frequency in the ferret.

Fortunately, the diabetes that develops secondary to insulinoma surgery is probably the most common form of diabetes and tends to be transient. When the body has time to heal from the surgery and adjust to its new hormonal state, the diabetes often resolves without any additional therapy.

The diabetes secondary to pancreatitis can be much more complicated, because ferrets appear to develop a "chronic active" pancreatitis that results in a long-term inflammatory state. They can also develop a "fulminant pancreatitis," which can do permanent damage to the pancreas, rendering them insulin dependent.

Other well-known causes of diabetes involve resistance to insulin, which occurs when the body produces enough insulin to go around, but the cells in the body no longer respond to the insulin properly. The most common reason in ferrets for this would be hormonal — sometimes the hormones produced by conditions such as an overactive adrenal gland can make the body more resistant to the hormones that regulate sugar metabolism. Obviously, this does not happen in every ferret with adrenal disease or we'd have an epidemic of diabetics! But, some ferrets seem more sensitive to the adrenal hormones and this can trigger diabetes. This type of diabetes should also resolve (but, interestingly, does not always resolve!) with therapy for the adrenal disease. Obesity is another major cause of insulin-resistant diabetes — and again, the diabetes should resolve (but not always) as the animal loses weight.

Perhaps the final common reason that could cause diabetes in the ferret is drug therapy. Some drugs like steroids, which are commonly used to boost blood sugar (such as for insulinomics) can actually overshoot the mark and result in diabetes. These same steroids are also used to treat many other diseases, including lymphoma. It is not uncommon to see patients being treated with any steroid develop diabetes, but prednisone and dexamethasone are perhaps the two

most commonly used. Both high doses and long-term use seem to predispose ferrets to the condition.

Telltale Signs Of Diabetes In Ferrets

What are the common signs of diabetes in ferrets? Ferrets with diabetes tend to drink a lot, urinate a lot, initially eat well but have some trouble maintaining their weight, and usually have one of the predisposing factors for diabetes (adrenal disease, recent pancreatectomy for insulinoma, steroid therapy, obesity). Sometimes you might notice that the urine almost feels sticky to the touch — this is because of the excess sugar secreted in the urine. Some ferrets with diabetes will be more prone to infections, often in the bladder, mouth, skin or other organs. If you suspect your ferret has diabetes, your veterinarian needs to examine both a blood and a urine sample in order to confirm the diagnosis.

Treatment Of Diabetes In Ferrets

Once the diagnosis of diabetes is reached, treatment of affected ferrets is complicated. The simplest treatment is to eliminate the cause of the diabetes where possible — treat the underlying hormonal disorder (adrenal disease), wait for the pancreas to heal after insulinoma surgery, reduce or eliminate steroids if possible, or lose weight in the overweight ferret.

If it is not possible to eliminate the signs of diabetes with ancillary management alone, we often take a much more direct approach to managing the disease. A prime component of diabetes management is diet: diabetic patients need to be on a high protein, low carbohydrate diet. This gives the body fuel in the form of protein without making it work as hard as it does to digest the carbohydrates. We also start to consider insulin therapy for the ferret. Many types of insulin are on the market and many potential starting doses. Either way, approximately 10 days after the ferret starts on insulin, we like to check a series of blood sugars to see how effective the insulin therapy is at bringing the values down. By checking a series (called a blood sugar curve) we are able to both determine if this is the right type of insulin for the patient, as well as the correct dose. It often takes multiple tries to get the system working. This can be frustrating for the owner, the veterinarian and the ferret — but it is important to do.

Milo's Story

To demonstrate how complicated the process could be, I'd like to share the story of the most special ferret ever, my own Milo.

It was love at first sight. I had driven 250 miles to pick up little Milo, a loved 5-year-old female with severe adrenal disease that her former owners couldn't treat. She was nearly bald and as skinny as a thumbtack. But we had an instant bond. We drove home, and that evening she had her first Lupron shot.

Milo started to gain weight, grow hair and, as the months went by, became quite chubby. Before long, we started having trouble controlling her adrenal disease, and she didn't respond well to her medications. Suddenly, she stopped eating and suffered severe pain. After series of tests, we were able to determine that she had a severe case of pancreatitis.

Over time, we discovered that high doses of steroids were the only thing that seemed to control her pancreatitis, although steroids are typically not considered the treatment of choice for many cases of pancreatitis. Then, she reacted to the Lupron injections with a flare-up of pancreatitis with each administration. She was frail enough (although still chubby!) that surgery was not an option.

At this point, we had multiple risk factors for diabetes: hormonal imbalance (adrenal disease), steroid administration, obesity and pancreatitis. The worst happened, Milo became diabetic. My 900-gram ferret drank in excess of 8 ounces of water per 24 hours. We started her on insulin, and eventually managed to stabilize her.

I tested her urine multiple times per day for glucose as well as regular blood testing. She required quite the pharmacy full of medications to keep her happy and healthy. As hard work as it was for both of us, it was possible to keep her balanced. Milo lived another 18 months with all three major diseases before I lost her to a blood clot to her lungs. But, she war danced for me right up until the day before I lost her.

Hope For Ferrets With Diabetes

Diabetes in ferrets, when it happens, is a complicated disease that requires an observant and dedicated owner along with a veterinarian who thinks outside of the box. By identifying all risk factors and managing them as tightly as possible, patients like Milo prove that we can indeed give a good quality of life to these "problem children."