Juvenile Onset Diabetes Mellitus (Sugar Diabetes) in Dogs & Puppies

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Located near the stomach and small intestine, the pancreas is a small gland that provides two important functions. It produces digestive enzymes, which are necessary for the proper digestion of food within the small intestine. And, it produces hormones, which help regulate the blood sugar (glucose) levels.

When starches and carbohydrates are eaten, they are broken down into the sugar glucose. This is absorbed through the wall of the digestive tract and passes into the bloodstream. Insulin allows glucose to leave the bloodstream and enter the body's tissue. Glucose can then be utilized as energy for the cells. When glucose levels are high, glucagon causes it to be stored in the liver and muscles as glycogen.

Diabetes mellitus is generally referred to as diabetes or sugar diabetes. Simply put, diabetes mellitus is the result of the pancreas producing insufficient quantities of the hormone insulin.

If the pancreas was producing normal amounts of insulin, then failed during adulthood (after one year of age), we refer to this as adult onset diabetes mellitus. When the pancreas does not develop normally in the puppy (usually prior to one year of age) with the result being inadequate insulin production, it is referred to as juvenile onset diabetes mellitus. Regardless of cause or age of onset, the result is, the pancreas does not produce sufficient quantities of the hormone insulin.

Insulin is necessary to move glucose into the cells from the bloodstream. Most brain cells, as well as intestinal and red blood cells, do not need high levels of insulin for glucose transport across their walls. It is the body tissues such as the liver and muscles which need insulin to move the glucose into their cells and provide energy. However, with diabetes, the glucose simply builds up in the bloodstream and causes an elevated blood sugar level.

It is not known why juvenile onset diabetes occurs. Some cases may be the result of autoimmune disorders and/or damage to the pancreas by puppyhood diseases such as infectious canine parvovirus. Genetics also plays a role, and juvenile onset diabetes is thought to be an inherited trait in Golden Retrievers.

What are the symptoms?

Juvenile onset diabetes usually results in a failure of proper growth in the puppy. The puppy is usually smaller than normal. Affected puppies not only fail to grow properly, but eventually lose weight despite being hungry and eating ravenously. Weight loss is a common symptom as the body burns muscle for energy to compensate for the body's inability to utilize glucose. Some puppies may become weak or paralyzed, especially noticed in the rear limbs.

Elevated blood sugar (glucose) can affect many systems of the body. Excess blood sugar will be lost through the kidneys, causing increased urination and thirst. Elevated blood sugar also alters the lens of the eye, leading to diabetic cataracts. A loss of muscle mass combined with inadequate energy levels within the cells lead to generalized weakness. The most common signs of diabetes are weakness, weight loss, and increased thirst and urination.

What are the risks?

The elevated blood sugar is toxic to many body systems and organs, including the blood vessels, nervous system (brain), liver, etc. A dog with uncontrolled diabetes will not live a normal life span. At the first indication of diabetes, a blood test should be performed by a veterinarian to determine the blood sugar level. The earlier treatment is initiated, the better.

What is the management?

Unlike humans, simply controlling the diet is seldom beneficial in the dog. Similarly, oral insulin tablets are not commonly effective in dogs. The treatment for a diabetic dog involves daily insulin injections. Dogs must be carefully monitored with blood and urine sugar tests to help determine the proper amount of insulin. Daily feeding must be on a regular schedule to provide a consistent supply of sugar so that insulin remains at the required level.

Some dogs with diabetes can live relatively normal lives with proper care. Maintaining the diabetic pet requires dedication on the part of the owner. Many pet owners have found the experience to be a rewarding one.

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