

Ferrets: Insulinoma

Insulinoma is one of the most common cancerous diseases affecting ferrets. The frequency of occurrence is approximately equal to that of adrenal gland disease. This means that this disease may affect over half of the ferrets in the U.S.

Insulinoma is a cancer of the pancreas, specifically of the area of the pancreas that produces insulin. This is not the same disease as the commonly and rapidly progressive pancreatic cancer of people. Other names for insulinoma include beta cell pancreatic tumor and islet cell tumor.

Insulin is responsible for keeping the body's sugar (glucose) levels in balance. With diabetes, insufficient insulin is produced, and as a result, the patient will have a high blood glucose level. Insulinoma is the opposite of diabetes, tumor cells in the pancreas produce too much insulin, the result being a low blood sugar (hypoglycemia).

Insulinoma can affect ferrets anywhere between the ages of two to eight years. Some ferrets develop a sudden onset of severe hypoglycemia, and the resulting low blood sugar causes the ferret to lapse into a weakened, non-responsive state. In other ferrets, the onset of hypoglycemia is more gradual, and the ferret will show intermittent signs of disease varying from decreased activity and "spaciness" to rear leg incoordination. Some ferrets will be nauseated and paw at their mouths, or have spasmodic twitching of their face and ears. If the blood sugar becomes markedly low, a ferret with insulinoma may have tremors, seizures, or go into a coma due to lack of sufficient glucose supply to the brain.

The presence of both the above clinical signs and a low blood sugar level are usually diagnostic for insulinoma. Most veterinarians agree that a blood sugar level less than 70mg/dl is very suggestive of insulinoma; although, at this level

they may not be demonstrating any signs of illness. Blood glucose levels of ferrets with signs of hypoglycemia are usually less than 50g/dl, with levels in the 20-40g/dl range commonly present in seizing or comatose ferrets. Your veterinarian will want to rule out other causes of hypoglycemia including anorexia, starvation, severe bacterial infection and liver disease. A measurement of the ferret's serum insulin level may also be recommended to help with the diagnosis.

Treatment recommendations for insulinoma include surgery, medical therapy and dietary modification. The choice of therapy depends on the severity of clinical signs, the age and overall health of the ferret and owner's preference.

Surgery involves removing the nodule or nodules of cancer within the pancreas. Often, the area surrounding these nodules is also removed (called a partial pancreatectomy) to increase the chance of removing all affected tissue. However, by the time a low blood sugar has been detected, micrometastasis (small amounts of the tumor) have often spread to other areas of the pancreas. Ferrets that have surgical removal of the affected pancreatic tissue usually have a longer period of time before they need any medical treatment and a longer total survival time.

Medical therapy involves the daily administration of drugs that will help the body produce more glucose (sugar) and use it more efficiently. Most veterinarians start with twice daily prednisone and adjust the dose in response to the ferret's blood sugar levels, as well as how the ferret is doing clinically. If prednisone is not effective, another medication, diazoxide (Proglycem®) may be added, but is not reliably effective. If the ferret has a sensitive gastrointestinal (GI) tract, GI protectants may also be prescribed.

Ferrets with insulinoma should be fed many small meals throughout the day. A diet containing high quality protein and moderate levels of fat is preferred. Food

with processed sugar or high levels of simple carbohydrates (such as fruit, semi moist cat food, cookies, etc.) should be avoided.

Many ferrets continue to experience a good quality of life for months to years following surgical and/or medical therapy.

For more information on this subject, speak to the veterinarian who is treating your pet.

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