

What's your diagnosis?
Rebecca Lee Class of 2011
8 year old M/C Lhasa Apso

- **History**

- Jasper presented to Kansas State Veterinary Medical Teaching Hospital with a suspected diagnosis of Insulinoma. Jasper had a 9 month history of weakness and ataxia after eating or exercise. He also had persistent hypoglycemia and weight gain over the last 9 months. The referring vet performed an insulin/glucose ratio used to diagnose insulin secreting tumors (insulinomas). Jasper's ratio was less than 30 indicating a possible insulinoma.

- **Physical Exam**

- On physical exam, Jasper presented with a primary complaint of lethargy and mild hind limb weakness.
 - Rectal temperature-101.1
 - Heart rate-108
 - Weight- 9.55 kilograms
- Jasper was started in lactated ringers intravenously with 2.5% dextrose solution to keep his blood glucose at a consistent level.

- **Diagnostics**

- Complete Blood Count and Chemistry Panel within normal limits except:
 - Blood glucose- 59 mg/dL (73-113)

- Abdominal Ultrasound

- **Description**

- There is an irregular mass of mixed echogenicity present caudal to the stomach and cranial to the transverse colon measuring 1.21 by 1.52 cm. The right adrenal had a mass of the cranial pole measuring 1.13cm in thickness. A single, round hypoechoic mass was present at the junction between the stomach and the duodenum.

- **Impressions**

- There is a mass within the left limb of the pancreas. There is another mass within the right adrenal gland. There is evidence of pancreatic lymphadenopathy.

- **Treatment**

- A surgical exploratory was performed on Jasper. Pinpoint, white lesions were found diffusely over the surface of all liver lobes. A punch biopsy of the liver was performed to remove a small ½ cm section of parenchyma. Within the left limb of the pancreas, a large 2 centimeter and a smaller ½ centimeter nodule were found. A left limb partial pancreatectomy was performed and the limb was submitted for biopsy. Gastroduodenal lymph nodes and a suspicious omental mass were also submitted for biopsies. Care was taken to avoid damaging the sensitive pancreatic tissue as post-operative pancreatitis is a major complication.

- **Outcome**

- After surgery, Jasper's glucose was carefully monitored twice daily. Jasper was unable to maintain his blood glucose level above 40, so dextrose solution was added

to his lactated ringer's solution. Post-operative hypoglycemia was experienced as the metastatic lesions were still producing insulin. Jasper was inappetent for several days post-operatively and suffered from nausea indicating mild, acute pancreatitis. After several days in the intensive care, with a slightly improved appetite, Jasper was able to go home. Jasper was sent home with instructions for the owner to monitor his attitude and watch for signs of hypoglycemia. Jasper was to begin treatment with Prednisone to antagonize the effects of insulin and to enhance gluconeogenesis and glycogenolysis.

- Histopathology revealed Jasper had Islet cell carcinoma of the pancreas with metastasis to lymph nodes and the liver. One of the lymph node samples consisted of a large neoplasm identical to the one attached to the pancreas and in the liver. There was a small amount of lymphoid tissue compressed along the periphery. The second, and smaller, nodule did not contain any evidence of lymph node. It consisted entirely of neoplastic tissue identical to that in the pancreas and adipose tissue.

- **Discussion**

- Insulinomas are functional tumors of pancreatic beta cells. There is excess insulin secretion causing chronic hypoglycemia. The insulinoma responds to a glucose load by releasing excess insulin. Normal insulin secretion is inhibited when blood glucose levels drop below 60mg/dl however; insulin secretion is not inhibited by a decrease in blood glucose with insulinomas. Metastasis is commonly seen to the local lymph nodes, liver and omentum. Medium to large breed dogs with an average age of 9 years is the most common signalment. Common clinical signs of affected dogs include: weakness, collapse, lethargy, ataxia and muscle fasciculations.

Treatment of choice is surgical removal of the insulinoma although more than 50% of insulinomas have metastasized at the time of surgical exploration. Surgical removal thus becomes surgical debulking.

- In Jasper's case, once metastasis was identified during surgery, his prognosis became very guarded. Immediately after surgery, Jasper's glucose was still low indicating that even though the primary tumor in the pancreas was removed, the metastatic lesions were still actively secreting insulin. With surgical excision, median survival time is 10-14 months but only 6-8 months if metastasis is present.

- References

- <http://www.merckvetmanual.com/mvm/index.jsp>
- Schermerhorn, T. Department of Clinical Sciences. Insulinoma and hypoglycemia lecture.