



# What's New at Imaging Center for Animals

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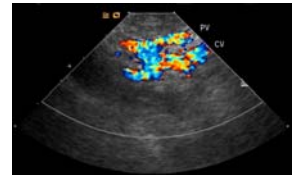
**ICA offers Imaging Services 5 days a week from 8:00AM to 5:00PM.**

The Team at ICA brings you information and updates about different imaging studies in veterinary medicine.

## **DIAGNOSIS of Porto-Systemic Shunts**

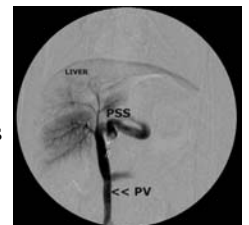
Portosystemic shunts occur when anomalous veins allow the portal blood to enter the systemic veins directly without first flowing through the hepatic sinusoids. Portosystemic shunts (PSS) can occur via acquired portosystemic collaterals (rare) or via congenital portosystemic shunts. Congenital PSSs are classified as intrahepatic or extrahepatic. Sonography, portography, scintigraphy, CT and MRI have been used to diagnose portal vein disorders.

**Sonography** provides anatomic information of the abdominal organs (liver, kidneys, urinary bladder, etc) and blood vessels, non-invasively, without radiation, in un sedated dogs. With Color Doppler techniques, the presence, direction and velocity of flow can be determined in any given vessels. It is therefore the first study performed.

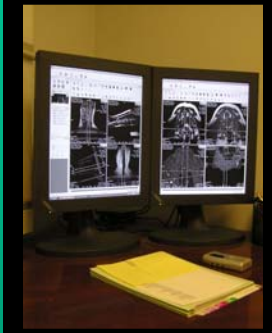
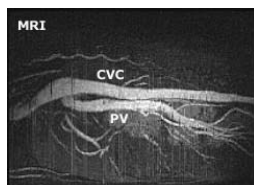


Depending upon the sonographic findings, where no PSS was identified, scintigraphy or portography may be recommended. Although scintigraphy has been considered the gold standard for the detection or exclusion of portosystemic shunting, it does not allow differentiation between congenital from acquired and provides poor anatomical definition. **Scintigraphic studies** are performed under anesthesia. A radioactive substance (Tc-99m) is administered within the spleen and the patient is imaged immediately in a lateral recumbency. A dynamic acquisition of images is obtained displaying uptake by the portal vein, liver, caudal vena cava and heart respectively in a normal patient. A shunt is diagnosed when heart activity is seen prior to liver activity on the gamma camera (shunt fractions can be calculated in such patients). The patient is kept all day and released at the end of the day. No special post-procedure care is needed.

**Portography** provides a true mapping of the abdominal vascularization, and the differentiation between intra- from extrahepatic PSS is possible. However, portography is more invasive and involves ionizing radiation. When the PSS is identified, the surgical ligation (for extrahepatic shunt) can be done under the same anesthesia. In patients where an intra-hepatic shunt is suspected, a retrograde portogram is performed, then the intrahepatic shunt is embolized using coils.



**CT and MRI** give detailed anatomic information of the vessels, however they cannot determine the flow-direction, moreover both procedures are time-consuming and require general anesthesia. These modalities are gaining interest and popularity in the evaluation of dogs with PSS but are not yet currently used.



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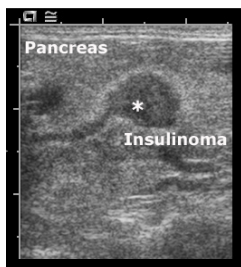


## DIAGNOSING INSULINOMA

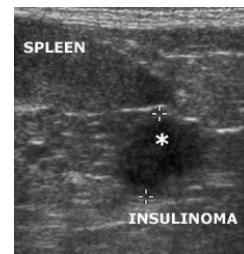
### Dogs, Cats, Ferrets

Differential diagnosis for hypoglycemia include hypoadrenocorticism, hepatic failure, large extrahepatic neoplasms, sepsis, polycythemia, insulinomas.

Sonography can be used for the initial evaluation of dogs with hypoglycemia. It is performed in an attempt to locate the pancreatic insulinoma and determine the presence of metastatic disease. Insulinomas usually appear as single, small (1-3cm) spherical or lobulated hypoechoic nodules at the surface of the pancreas. Their identification may be difficult beyond the imaging system's resolution. Using a 7.5MHz or higher frequency transducer is necessary to identify these small lesions. Although they are usually solitary, the entire pancreas should be examined carefully for multiple tumors. They are more frequently localized in the right limb and body of the pancreas. Nodules in the left lobe are harder to identify due to adjacent gastric and colonic gas. Regional lymphadenopathy, typically the duodenal nodes if the insulinoma is in the



right lobe, can appear similar to the unseen primary insulinoma. Metastasis to the liver results in hypoechoic nodules of variable number and size. One study reported metastasis to the regional lymph nodes and liver present in 60% of reported cases. Accurate preoperative detection, localization, and staging of the primary tumor and metastasis are essential for the selection of appropriate candidates for surgery. Surgery offers a chance to “cure” dogs with benign tumors. With non-resectable tumors or those with obvious metastasis, removal or debulking of as much abnormal tissue as possible has frequently resulted in remission of, or at least reduction in, clinical signs and improved response to medical therapy.



The lack of visualization of a mass in the pancreas does not rule out the condition. Insulinomas may be difficult to detect depending on their size. Macroscopically visible lesions are detectable; however, animals with serum chemistry values indicating insulinoma can occur with microscopic lesions that evade detection with even MRI or CT.

## CASE OF THE WEEK

**Bichon Frise, 13.5 years old, FS was presented with swelling of the distal limbs. A 5cm thoracic mass was diagnosed (poorly differentiated carcinoma).**

In addition to the soft tissue swelling of the distal limbs, periosteal reaction can be seen along the radius, ulna, tibia, metacarpal/tarsal bones, and phalanges. These findings are compatible with hypertrophic osteopathy or osteoarthropathy (HO).

HO is usually seen secondary to pulmonary disease or neoplasia. The pathogenesis is not completely understood. The most consistent pathologic finding in affected animals is an increased blood flow to the extremities, resulting in an overgrowth of vascular connective tissue with subsequent fibrochondroid metaplasia and subperiosteal new bone formation. New bone formation usually begins on the digits and progresses proximally. The periosteal new bone formation results in cortical thickening.



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