

PSS Information Sheet

What is a portosystemic shunt?

Blood leaving the abdominal organs is supposed to flow through the liver and be filtered before it continues to the heart. Certain diseases cause an abnormal vessel(s), called a shunt, to by-pass the liver and enter the general circulation without being cleansed. This leads to a wide variety of symptoms which can be fatal if not treated. Some pets are born with the abnormal shunt vessels, and others develop the shunt later in life. Gross shunts are large enough to be seen without a microscope and are often treated with surgery to close the shunt. Microscopic shunts (microvascular dysplasia) cannot be seen with the naked eye. Microvascular dysplasia causes similar symptoms and blood test results as a gross portosystemic shunt (PSS), but is treated medically instead of surgically. Blood tests can reveal that the liver is abnormal, but cannot distinguish a gross shunt from a microscopic shunt, or a variety of other liver abnormalities. Specialized imaging tests are required to detect a shunt. Specialized imaging can both confirm or rule out a suspected PSS and determine whether surgery is likely to be beneficial.

What is Transcolonic Portal Scintigraphy?

Transcolonic scintigraphy is a functional test. Scintigraphy answers the YES or NO question, “Is a gross shunt present?” That is, using dynamic image acquisition, it determines whether venous blood flows through the liver for filtration before it flows to the heart, or whether it gets shunted to the heart without going through the liver. Radioactive liquid is placed in the rectum and is instantly absorbed into the venous blood stream. A gamma camera measures the radioactivity in the heart and liver. If the radionuclide appears in the heart before or at the same time it arrives in the liver, then there has to be an abnormal shunt vessel carrying it there. There is no other way it can get there. This test does not require anesthesia, is not painful, and has no side effects. Within a few hours the radioactivity disappears and poses no risk to others. This test is 99% accurate. There are no false positives for gross shunts. The 1% false negative can occur when a rare shunt vessel does not directly empty into the portal vein. So a normal scintiscan does not mean the liver is normal; it means only that there is no gross shunt. Microvascular dysplasia will give a normal scintiscan, and requires a liver biopsy for diagnosis.

Why is ultrasound needed?

Ultrasound is an anatomic test. We don't actually see the shunt vessel with scintigraphy since it is a functional test rather than an anatomic exam. With ultrasound, the specific shunt vessel(s) can often be located, which helps with surgical planning. When the scintiscan shows us that there is no gross shunt, then ultrasound is an excellent tool to inspect the liver and investigate the cause of the blood test abnormalities. Liver biopsy can provide additional information about the cause and treatment of the patient's disease. Ultrasound-guided biopsy allows accurate placement of the biopsy needle. Patients with a gross shunt do not need a liver biopsy. Thus, by doing the scintiscan first, we know which patients do and do not need biopsy, and avoid performing this procedure in patients that will not benefit from it.

What if my pet needs surgery to correct a portosystemic shunt?

The details of the surgical procedure, the risks associated with this surgery and the prognosis will be explained to you by the surgeon that you and your family veterinarian select to perform the surgery. Depending on the specifics of each case, the surgeon may need to perform additional diagnostic tests before doing surgery.

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