Key Points

- Clinical Signs of PSS
- Diagnosis of PSS
- Preoperative Medical Management
- Postoperative Medical Management

Congenital intrahepatic portosystemic shunts (PSS) in large and medium breed dogs. These breeds include Irish wolfhound, old english sheep dog, golden retrievers, labrador retrievers, samoyed, australian shepherds and australian cattle dogs and poodles. Single extra hepatic PSS usually occurs in small breed dogs such as maltese, yorkshire terrier, pug, schnauzer and shih tzu. Congenital shunts are hereditary primarily in maltese, irish wolfhounds, and yorkshire terriers.

Common clinical signs include poor growth rate, weight loss, fever, dull course or thin hair coat, neurologic dysfunction, lethargy, depression, ataxia, seizures, behavioral changes, blindness, and any clinical signs of hepatic encephalopathy. Hepatic encephalopathy may follow a high protein meal, diuretics, hypokalemia, and alkalosis, transfusion of red blood cells, hypoxia, hypovolemia, gastrointestinal hemorrhage, infection, constipation, or analgesics. Common clinical signs of PSS in cats include hyper salivation, copper colored irises or any of the above listed clinical signs that are noted in dogs.

Bloodwork should be performed on every patient that is suspected for a PSS. Routine blood work for a PSS workup will include a CBC, chemistry, and electrolyte panel, and urinalysis. Specific liver function tests that should be included in a workup is bile acid and, or ammonia concentrations. To diagnose a PSS and determine its exact location ultrasonography, scintigraphy, CT or MRI should be performed.

Medical management of patients with PSS should include any correction of fluid, electrolyte, and glucose imbalances. Dietary proteins should be restricted to reduce ammonia formation by colonic bacteria therefore, a protein restricted diet that is digestible, high in zinc, high in vitamin E, and low in manganese should be fed. The preferred diet for a PSS is Hill’s L/D. Any gastrointestinal hemorrhage should be treated before surgery since the blood provides an additional protein substrate. Neomycin is a non-absorbable intestinal antibiotic that is effective against urea splitting bacteria and should be administered to decrease bacterial population within the gut. Colonic bacteria can be reduced by using enemas and cathartic's and is importance in animals with hepatic encephalopathy. Lactulose is a common medication given to help reduce this bacteria because it is hydrolyzed in the colon, will increase fecal water loss osmotically and acidify colonic contents. With proper medical management, the patient's weight and quality of life will improve and surgery can be performed when the patient is healthier. Approximately 50% of patients treated with medical management alone are usually euthanized within 10 months of the diagnosis therefore; surgery is considered to be the treatment of choice for PSS.
Postoperative complications commonly include pain, hypothermia, and glucose abnormalities. Portal hypertension is an important postoperative concern so differences in opinions on how to control it may occur. Analgesics should be used to help make the patient feel more comfortable postoperatively. Abdominal pressing from crying, straining or stress will increase portal pressures. Most patients will have hyperglycemia post operatively. If the patient is hypoglycemic and clinical signs such as week at the threaty pulses, pale mucous membranes, progressive hypothermia, prolonged CRT, no responsiveness and seizures occur dextrose boluses should be given. Patients should be fed as soon as possible after recovery and once they are eating they usually maintain their blood glucose concentration without complications or additional supplementation.

Seizures commonly occur in cats and small breed dogs. In a small number of patients no response is seen with administration of intravenous dextrose, enemas, or diazepam administration. If this occurs, the patient should be given a lactulose enema and placed on a CRI of propofol for 12 to 24 hours to stop the seizures. The feline patient should be routinely treated with a lactulose and neomycin orally when they recover from surgery.

A low-protein diet and lactulose are continued postoperatively until liver function improves, this usually takes 4 to 6 weeks. Every three months after surgery bile acids and albumin are monitored to evaluate liver function. Milk thistle can be added to the drug regimen if after six months postoperatively the bile acids are still increasing.

The prognosis is better for dogs with extra hepatic shunt or for animals that undergo complete shunt ligation with ameroid constrictors or for those patients that never have clinical signs of hepatic encephalopathy. Cats commonly develop recurrent clinical signs after undergoing surgery and sometimes have to be taken back for a second surgery to completely fix a PSS.