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## Exocrine Pancreatic Insufficiency

### Issue Description

*Exocrine pancreatic insufficiency is the inability to properly digest food due to a lack of digestive enzymes made by the pancreas. This disease is found frequently in dogs.*

### Other Names

EPI

### Causes

Exocrine Pancreatic Insufficiency is more prevalent in German Shepard dog (70%), English Setters (5%) and Collies (rough coated) (20%). The main reason for this condition is hereditary (autosomal recessive) and involves immune-mediated damage of the pancreas. Due to this reason, there is possibility of "pancreatic acinar atrophy" (PAA), where the pancreas simply is wrinkled and useless. A lack of effective pancreatic exocrine secretion in the small intestine leads to EPI.

Other probable causes for canine EPI are pancreatic neoplasia, repeated acute or subacute pancreatitis, and chronic pancreatitis.

### Symptoms

Animals with exocrine pancreatic insufficiency often show weight loss despite having a normal or increased appetite. Many dogs with EPI will have excessive appetites, even for things they normally would not eat, including their own feces. Diarrhea is often present, but will vary in consistency and frequency. Grey colored, oily appearing stools are the classic finding for EPI in young dogs. Increased rumbling sounds are often heard from the abdomen, and many affected animals will pass increased amounts of gas. Occasionally, a long history of intermittent gastrointestinal signs like vomiting, diarrhea, and reduced appetite will be present if EPI is due to recurrent bouts of pancreatitis.

### Diagnosis

The key diagnostic test for exocrine pancreatic insufficiency is called the serum trypsin-like immunoreactivity test, or TLI. The affected animal's blood sample for this test should be drawn after at least a twelve-hour fast. A low value on this test, accompanied by symptoms consistent with EPI, virtually confirms the diagnosis.

Routine bloodwork and other laboratory tests may help establish the diagnosis of concurrent diseases, but are generally not helpful in diagnosing exocrine pancreatic insufficiency per se. Mild liver enzyme changes, and low serum cholesterol levels may be seen with EPI, but other significant test findings indicate clinical processes other than, or in addition to, EPI.

### Treatment

The main treatment for exocrine pancreatic insufficiency is the administration of enzyme replacements that are given with each meal. If the diagnosis of EPI is correct, and if sufficient enzyme supplement is provided, diarrhea will begin to resolve in a few days, followed by gradual weight gain in most dogs. It is very important to establish the diagnosis of EPI before starting pancreatic enzyme replacement therapy. Enzyme replacement can be expensive, and usually must be given for the rest of the patient's life. Some animals with diarrhea and a provisional diagnosis of EPI are treated with pancreatic enzyme replacements even when the diagnosis of EPI has not been confirmed. These animals may have resolution of their diarrhea for reasons other than enzyme replacement. If their response to treatment is incorrectly interpreted as confirming the existence of pancreatic insufficiency, they may be kept on an expensive and potentially unnecessary treatment for a long time.

Once an appropriate dose is found that controls the symptoms, the enzyme dose can be reduced until the lowest dose that maintains control is identified. The powder form of enzymes is generally more effective than tablets, although the latter are easier to administer.

Some animals do not respond appropriately to enzyme replacement alone. These patients may benefit from medications that augment enzyme replacement therapy. Certain drugs that block H-2 receptors in the stomach may increase enzyme replacement effectiveness by preventing breakdown of the enzymes in the stomach.

Some dogs seem to do better when they are fed a low fat, low fiber, highly digestible diet, but most dogs do not need specific dietary treatment for EPI. Oral vitamin E supplementation or intramuscular injections of vitamin B-12 may be administered to restore serum concentrations of these substances in dogs with EPI. Although such deficiencies have been documented in EPI, it is not known if they are significant. Rarely, dogs with these vitamin deficiencies that do not respond to enzyme replacement alone will do better when these deficiencies are corrected. Antibiotics may be helpful in some dogs if excessive bacterial growth in the intestines has occurred.

## **Prognosis**

Treatment of exocrine pancreatic insufficiency is usually necessary for life. Most dogs with EPI due to pancreatic acinar atrophy respond well to enzyme replacement alone, and have a good long-term prognosis. Although affected dogs do not always regain the weight they lost, most of them develop normal stools and no longer continue to lose weight. Animals requiring additional medications to boost the effectiveness of enzyme therapy generally do well.

In cats and in older dogs with EPI due to chronic pancreatitis, the outcome is much less predictable. If other conditions are present, particularly diabetes mellitus, then the prognosis may depend more on the ability to treat these complicating factors successfully.

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