

Pancreatitis

What is the pancreas and what does it do?

The pancreas is located next to the stomach and small intestine in the front of the abdomen. The pancreas has two primary functions: firstly, to make insulin and other hormones; secondly, to make digestive enzymes that help to break down fats, carbohydrates and proteins in the intestinal tract. The digestive enzymes are stored as inactive forms in the pancreas and are then activated upon release into the intestines.

- Pancreatic *endocrine* function is the making of hormones
- Pancreatic *exocrine* function is the making of digestive enzymes

What is Pancreatitis?

Pancreatitis is inflammation in the pancreas. The inflammation in the pancreas causes a breakdown of the normal barriers present and activation of the digestive enzymes within the tissue of the pancreas. This causes a worsening of inflammation and progression of the pancreatitis. Pancreatitis can be mild and cause minimal clinical signs or more severe and be potentially fatal. Additionally, pancreatitis can be acute and short lasting or chronic with periodic recurrences.

- *Autodigestion* is the activation of enzymes within the pancreas and digestion of the pancreatic tissue
- Pancreatitis affects both dogs and cats, although for different reasons

What causes Pancreatitis?

Pancreatitis in dogs is often attributed to a high fat or high protein meal. It can also result from certain toxins, trauma, cancer, or infection within the pancreas. Certain breeds are predisposed because of alterations in fat metabolism. In many cases, there is no identifiable cause.

In cats, pancreatitis is often considered an immune-mediated disease or associated with ascending infection from the intestine. It is often diagnosed in association with other conditions, such as inflammatory bowel disease.

- *Breeds* predisposed to pancreatitis include Miniature Schnauzers and Shelties
- A *pancreatic abscess* is a pocket of infection within the pancreas that requires surgery to treat

What clinical signs does pancreatitis cause?

Most animals with pancreatitis have a number of clinical signs that are associated with the inflammation in the pancreas. In mild cases, abdominal discomfort, gastrointestinal upset (vomiting and/or diarrhea)

Pancreatitis

or decreased appetite may be the only signs. In more severe cases, abdominal fluid accumulation, coagulation abnormalities, and diabetes may result. In cats, the most common clinical sign is simple anorexia. Because the bile duct travels through the area of the pancreas, it can become obstructed in severe cases.

Common signs include:

- ❖ Dehydration
- ❖ Lethargy
- ❖ Vomiting
- ❖ Hematemesis
- ❖ Diarrhea
- ❖ Abdominal Pain
- ❖ Anorexia

Less common signs include:

- ❖ Diabetes mellitus
- ❖ Jaundice
- ❖ Ascitis
- ❖ Bleeding disorders

- *Hematemesis* is vomiting blood
- *Ascites* is the build-up of fluid in the abdomen; it can be seen with severe pancreatic inflammation
- *Jaundice* is the yellow discoloration of the tissues that results from an increase in bilirubin resulting from obstruction of the bile duct
- *Diabetes mellitus* is due to decreased insulin production or response and resultant increase in blood glucose (sugar) levels

What laboratory changes does Pancreatitis cause?

Pancreatitis can cause many changes on laboratory tests. Unfortunately, especially in cats and more chronic cases, pancreatitis may cause no laboratory changes. Ultimately, laboratory tests are combined with other tests to confirm the diagnosis. Laboratory tests can also provide prognostic information. Cats, unlike dogs, may have no laboratory changes at all.

Common laboratory changes include:

- ❖ Elevated lipase
- ❖ Elevated amylase
- ❖ Elevated white blood cell count
- ❖ Mild elevations in BUN and creatinine
- ❖ Elevated liver enzymes
- ❖ Elevated PLI and TLI

Less common laboratory changes include:

- ❖ Prolonged coagulation values
- ❖ Elevated bilirubin
- ❖ Severe elevations in BUN and creatinine
- ❖ Low albumin
- ❖ Low platelets
- ❖ Electrolyte abnormalities

Pancreatitis

- *Lipase and amylase* are enzymes made in the pancreas and other organs that become elevated in cases of pancreatitis
- *BUN and creatinine* are measures of dehydration or kidney failure
- *Pancreatic lipase immunoreactivity (PLI)* and *Trypsin like immunoreactivity (TLI)* are blood tests that can be measured in difficult to diagnose cases of pancreatitis. They are more sensitive and specific than amylase and lipase
- *Albumin* is a blood protein that can decrease in severe cases of pancreatitis associated with ascites and inflammation
- Coagulation abnormalities and decreased platelets can develop in cases of pancreatitis with severe local or system inflammation
- Elevated liver enzymes and bilirubin result from obstruction of the bile duct, which passes through the pancreatic tissue; this can develop days to weeks after the initial bout of pancreatitis

What testing is recommended for Pancreatitis patients?

There are three main goals in evaluating patients with pancreatitis. First, the diagnosis must be confirmed; secondly, the optimal therapeutic course must be determined; and finally, prognostic and complicating factors must be evaluated.

Patients evaluated for pancreatitis may need the following tests:

- ❖ Chemistry profile
 - ❖ Urinalysis
 - ❖ Abdominal ultrasound
 - ❖ Complete Blood Count (CBC)
 - ❖ Coagulation testing
 - ❖ PLI or TLI
- *Abdominal ultrasound* is a non-invasive test that uses sound waves to create images of internal organs and structures; this is performed to look at the pancreas and evaluate for underlying disease
 - Cats with suspected pancreatitis may also require other tests such as endoscopy to evaluate for concurrent intestinal disease

What complications can arise in patients with pancreatitis?

While most of the clinical signs that develop are directly related to the pancreatic inflammation and associated pain and gastrointestinal upset, pancreatitis can have a number of complicating variables that may arise and require specific treatment. The most severe of these include coagulation abnormalities that can result in a clinical bleeding disorder and obstruction of the bile duct. Additionally,

Pancreatitis

patients that develop a solitary event of pancreatitis may develop recurrent bouts of the disease. Patients with recurrent, chronic or very severe pancreatitis have a small risk of developing diabetes.

What treatment options are available for pancreatitis?

Pancreatitis in dogs is considered a treatable disease. For mild cases, simple dietary modification with low fat diet in addition to fluid therapy may be all that is required. In more severe cases, however, intensive hospital care may be required. To 'rest' the pancreas, food and water are withheld in most of these cases. Plasma transfusions are often given to reduce pancreatic inflammation and the risk of secondary clotting disorders. This is usually combined with intravenous fluids, anti-nausea/vomiting medications, antibiotics, and pain medications. Pre-emptive evaluation and therapy for complicating variables is of paramount importance in these patients. In the most severe cases, surgery may be required to remove parts of the pancreas or re-route the bile duct.

Dogs with chronic or recurrent pancreatitis may remain on low-fat diets for life and receive supplementation with pancreatic digestive enzymes.

Cats with pancreatitis may require medications to stimulate the appetite. Low-fat diets need not be fed to cats with pancreatitis. Short term feeding tubes are required in some cases to ensure that a patient continues to receive nutritional support.

- *Antibiotics* may be used in cases where pancreatic infection/abscessation is suspected
- *Pain medications* are used in cases that have abdominal discomfort

What sort of long-term monitoring is recommended for pancreatitis patients?

Recommendations for follow-up vary widely depending on the severity of the case. In many cases, simple short-term follow-up bloodwork may be all that is required to ensure resolution of lab changes. In cases that become recurrent or chronic, periodic labwork or ultrasound examinations may also be recommended.

What is the prognosis with pancreatitis?

The prognosis with pancreatitis in dogs is generally considered good with the majority of affected animals making a complete recovery. Animals that have particularly severe disease, require surgery, or develop many complications are generally considered to have a poorer prognosis. The prognosis in cats

Pancreatitis

is also considered generally good, although this may be affected by any other conditions that are present. The specifics of your case will be discussed at the time of your appointment.

