

Pancreatitis—Dogs

(Inflammation of the Pancreas)

Basics

OVERVIEW

- The pancreas is an organ of the body, located near the upper small intestine; the pancreas produces insulin to regulate blood sugar and produces digestive enzymes involved in digestion of starches, fats, and proteins in the animal's diet; the digestive enzymes are delivered to the upper small intestine through the pancreatic duct
- “Pancreatitis” is inflammation of the pancreas, often unknown cause
- Sudden (acute) pancreatitis—inflammation of the pancreas that occurs abruptly, with little or no permanent damage to the pancreas
- Long-term (chronic) pancreatitis—continuing inflammation of the pancreas that is accompanied by irreversible damage to the pancreas
- “Edematous pancreatitis” is characterized by fluid buildup in the interstitium (small spaces between tissues or parts of the pancreas) and mild inflammation with neutrophils and lymphocytes (two types of white blood cells); the dog generally recovers rapidly
- “Necrotizing pancreatitis” is inflammation of the pancreas characterized by bleeding (hemorrhage) and areas of death of tissues (known as “necrosis,” thus the name “necrotizing pancreatitis”); it usually is a severe and prolonged disease and many affected dogs die



GENETICS

- Possible genetic basis in miniature schnauzers where mutations in the *SPINK 1* gene may confer increased susceptibility

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs

Breed Predispositions

- Miniature schnauzer
- Yorkshire terrier
- Cocker spaniel

Mean Age and Range

- Sudden (acute) pancreatitis is most common in middle-aged and old dogs (over 7 years of age); mean age at presentation to the veterinarian is 6.5 years

Predominant Sex

- Female

SIGNS/OBSERVED CHANGES IN THE PET

- Predominantly digestive tract signs
- Sluggishness (lethargy), depression, lack of appetite (known as “anorexia”)
- Vomiting
- Diarrhea
- Abdominal pain (if chronic, may not exhibit pain)
- Dehydration—common; due to gastrointestinal losses of fluid
- Mass lesions may be felt during physical examination
- Fever—common in acute severe pancreatitis
- Less common systemic abnormalities include severe breathing difficulties (known as “respiratory distress”), bleeding disorders, and irregular heartbeats (known as “cardiac arrhythmias”)

CAUSES

Usually unknown; possibilities include the following:

- Nutritional factors (such as an increase in lipoprotein (complexes of lipid and protein) concentration in the blood, known as “hyperlipoproteinemia”)
- Pancreatic trauma or lack of blood flow (known as “ischemia”) to the pancreas
- Duodenal reflux (a condition in which contents in the upper small intestine [duodenum] move backward)
- Drugs or toxins
- Pancreatic duct blockage or obstruction
- High levels of calcium in the blood (known as “hypercalcemia”)
- Infectious diseases—such as babesiosis

RISK FACTORS

- Breed—potential genetic predisposition in miniature schnauzer
- Obesity
- Another disease, for example, such as sugar diabetes (diabetes mellitus); increased levels of steroids produced by the adrenal glands (known as “hyperadrenocorticism” or “Cushing’s syndrome”); long-term (chronic) kidney failure; cancer
- Recent administration of certain drugs

Treatment

HEALTH CARE

- Inpatient medical management most often required
- Aggressive intravenous (IV) fluid therapy
- Fluid therapy goals—correct low circulating blood volume (known as “hypovolemia”) and maintain pancreatic circulation
- A balanced electrolyte solution such as lactated Ringer’s solution (LRS) is the first choice for providing hydration
- May need colloids; colloids are fluids that contain larger molecules that stay within the circulating blood to help maintain circulating blood volume, examples are oxyglobin and hetastarch
- Following replacement of fluid deficits, give additional fluids to match maintenance requirements and ongoing losses
- Potassium chloride (KCl) supplementation usually needed, because potassium is lost from the body in the vomit

ACTIVITY

- Restrict

DIET

- Continue to feed by mouth, unless vomiting is not controlled; feeding maintains the integrity of the intestinal lining and minimizes bacterial invasion from the intestines and into the body

- Withhold all food and water by mouth (known as “NPO”) in pets with persistent vomiting for the shortest time possible; when no vomiting has occurred for 12 hours, offer small volumes of water; if tolerated, begin small, frequent feedings of a carbohydrate (such as boiled rice); gradually introduce a protein source of high biologic value (such as cottage cheese or lean meat)
- Avoid high-protein and high-fat diets, use fat-restricted diets
- Pets needing extended time without food and water by mouth (NPO) may require tube feeding into the gut, or intravenous feeding (known as “total parenteral nutrition”), nasal (known as “nasoesophageal tube”) or esophagus (known as “esophagostomy tube”) or stomach (known as “gastrostomy tubes”) can also be used for feeding options if very ill

SURGERY

- May need surgery to remove localized accumulations of fluid (known as “pseudocysts”), abscesses, or areas of dead (necrotic) tissue seen with necrotizing pancreatitis (inflammation of the pancreas characterized by bleeding and areas of death of tissues)
- May need surgical exploration of the abdomen and biopsy of the pancreas to confirm pancreatitis and/or to rule out other diseases not involving the pancreas
- Bile duct blockage outside of the liver (known as “extrahepatic biliary obstruction”) from pancreatitis requires surgical correction

Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all-inclusive

- Drugs are indicated for intermittent vomiting; ondansetron or maropitant are examples
- Steroids are indicated for treatment of shock
- Antibiotics, if evidence of sepsis (presence of pus-forming bacteria and their poisons in the blood or tissues)—penicillin G, ampicillin, and enrofloxacin are examples
- Pain relievers (known as “analgesics”) to relieve abdominal pain, such as buprenorphine or fentanyl

Follow-Up Care

PATIENT MONITORING

- The veterinarian will evaluate hydration status closely during first 24 hours of therapy; twice daily check physical examination; body weight; packed cell volume (PCV, a means of measuring the percentage volume of red blood cells as compared to the fluid volume of blood) and total solids (a quick laboratory test that provides general information on the level of protein in the fluid portion of the blood); and blood urea nitrogen (BUN) and urine output to monitor the kidneys and hydration status
- They will evaluate the effectiveness of fluid therapy after 24 hours, and adjust flow rates and fluid composition accordingly; repeat blood tests (serum biochemistries) to assess electrolyte/acid–base status
- Repeat plasma enzyme concentrations (pancreatic-lipase immunoreactivity [PLI] assay, a test that determines the levels of lipase, a pancreatic enzyme) after 7 days, to evaluate the status of the inflammation of the pancreas
- Watch closely for complications involving a variety of organ systems; perform appropriate diagnostic tests as needed
- Gradually taper fluids down to maintenance requirements, if possible
- Maintain feeding by mouth or via tubes as described above, on low-fat diets only

PREVENTIONS AND AVOIDANCE

- Weight reduction, if obese
- Avoid high-fat diets
- Avoid drugs that may increase the risk of inflammation of the pancreas (pancreatitis)

POSSIBLE COMPLICATIONS

- Failed response to supportive therapy
- Life-threatening associated conditions

- Progression of acute to chronic pancreatitis

EXPECTED COURSE AND PROGNOSIS

- Good for most pets with edematous pancreatitis (inflammation of the pancreas characterized by fluid buildup in the interstitium and mild inflammation with neutrophils and lymphocytes [two types of white blood cells]); these pets usually respond to appropriate symptomatic therapy
- More guarded to poor for pets with necrotizing pancreatitis (inflammation of the pancreas characterized by bleeding [hemorrhage] and areas of death of tissues [necrosis]) and systemic conditions

Key Points

- Sudden (acute) pancreatitis—inflammation of the pancreas that occurs abruptly, with little or no permanent damage to the pancreas
- Long-term (chronic) pancreatitis—continuing inflammation of the pancreas that is accompanied by irreversible damage to the pancreas
- Need for extended hospitalization
- Diagnosis and treatment can be expensive
- Possible complications include lack of response to supportive therapy and life-threatening complications

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