IDEXX Laboratories Introduces the SNAP® fPL™ Test

Pancreatitis, an inflammatory condition of the exocrine pancreas, is a multifactorial disease in cats with a variable clinical course and outcome. Feline pancreatitis is more common than many practitioners realize and diagnosis of this elusive disease can be extremely challenging.

Recognizing these challenges, Dr. Jörg Steiner and Dr. David Williams developed and validated the feline pancreatic lipase immunoreactivity (fPLI) assay for the diagnosis of pancreatitis at the Gastrointestinal Laboratory at Texas A&M University. The fPLI test has been shown to be both sensitive for detecting significant pancreatitis and specific for helping to rule out pancreatitis.

Previously, IDEXX had collaborated with Drs. Steiner and Williams to develop the quantitative Spec fPL® Test (feline pancreas-specific lipase test), available through IDEXX Reference Laboratories network, to assist in the diagnosis of pancreatitis in cats. The acceptance of this test has been overwhelmingly positive. The most frequent question asked of IDEXX has been “when will a SNAP® version be available?”

In response to these inquiries, IDEXX has continued to work with Drs. Steiner and Williams to develop the SNAP® fPL™ (feline pancreas-specific lipase) Test. The pet-side SNAP fPL Test uses the same monoclonal antibody and recombinant antigen technology as used in the laboratory Spec fPL Test.

Prevalence of Pancreatitis in Cats

A 2007 study published in the Journal of Veterinary Pathology found 67% of cats presented for necropsy, irrespective of the cause of death, had histologic evidence of pancreatitis, including 45% in apparently healthy cats. Chronic pancreatitis was more common than acute pancreatitis (60% versus 15.7%).

Although the prevalence of clinically significant pancreatitis is likely not this high, these findings suggest that pancreatic inflammation likely occurs with a wide variety of clinical conditions and potentially explains why mild pancreatic lesions are common even in clinically healthy animals.

Cats with other common ailments, including diabetes mellitus, inflammatory bowel disease, cholangitis and hepatic lipidosis, often have concurrent pancreatitis that is usually overlooked.

Clinical Signs

Cats with pancreatitis typically present with nonspecific signs of illness including lethargy, decreased appetite, dehydration and weight loss. Vomiting and abdominal pain are hallmarks of this disease in dogs, but in cats, vomiting may be absent or intermittent and abdominal pain is rarely recognized. Diarrhea can be associated with pancreatitis or secondary to concurrent gastrointestinal disease. Icterus, fever and a palpable abdominal mass may be found on physical examination.

Laboratory Findings

Routine laboratory findings in cats with pancreatitis may be normal, nonspecific or attributed to concurrent conditions which are common in this species. CBC changes most commonly seen in cats with pancreatitis are nonregenerative anemia, leukocytosis and leukopenia. Increased liver enzymes, hyperbilirubinemia, hyperglycemia, azotemia, electrolyte imbalances and hypocalcemia can be seen on a complete biochemical profile. Serum activities of amylase and lipase are not helpful in diagnosing pancreatitis in cats.

Serum trypsin-like immunoreactivity (TUI) concentration is specific for exocrine pancreatic function and is the test of choice for diagnosing exocrine pancreatic insufficiency in cats. However, in cats with clinical signs of pancreatitis, serum fTLI concentration has been shown to be poorly associated with histopathologic diagnosis and overall sensitivity of 28% and specificity of 75% for the diagnosis of pancreatitis.

Diagnostic Imaging

Radiographs are an important diagnostic tool when evaluating sick cats, especially if they present vomiting. In cats with pancreatitis, abdominal radiographs may show a loss of detail in the cranial abdomen, shifting of abdominal organs and, in some cases, suggestion of a mass in the cranial abdomen. However, these findings are rather subjective, and a conclusive diagnosis of pancreatitis is not possible by abdominal radiography alone.

Abdominal ultrasonography is also a valuable tool when evaluating sick cats for evidence of pancreatitis. In addition, ultrasound allows evaluation of other organs. This is important because it is common for cats with pancreatitis to have liver and/or intestinal disease concurrently. As technology has improved, it is no longer sufficient just to visualize the pancreas or an enlarged pancreas to diagnose pancreatitis on ultrasound. Changes in pancreatic parenchymal echogenicity, evidence of peripancreatic fat necrosis and fluid accumulation are supportive of pancreatitis. Recent studies have shown ultrasound to be 24%–67% sensitive and 73% specific for the diagnosis of pancreatitis.
## Pancreatitis in Dogs versus Cats

<table>
<thead>
<tr>
<th>CANINE</th>
<th>FELINE</th>
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</table>
| **Classic Signalment** | **Age:** Middle-aged to older  
**Sex:** Male or Female  
**Breeds predisposed:** Schnauzers, Yorkshire terriers, poodles |
| **Age:** Middle-aged to older  
**Sex:** Male or Female  
**Breeds predisposed:** Possibly Siamese |
| **Weight** | Often obese |
| **Prevalence** | 1.0% of 9,342 dogs on necropsy  
>90% of cases undiagnosed (results on recent necropsy study) |
| **Prevalence** | 0.6% of 6,504 cats on necropsy  
67% of cats presented for necropsy (45% of healthy cats) |
| **Risk Factors** | **Drugs:** Potassium bromide, azathioprine, fluosamide, tetracycline, aspirin, sulfa drugs, L-Asparaginase, zinc toxicosis  
**Diet:** High-fat foods; dietary indiscretion |
| **Drugs:** Organophosphates  
**Infectious causes:** Toxoplasma gondii, pancreatic fluke (Eurytrema procyonis), liver fluke (Amphimerus pseudofelineus); Viral – FIP, herpesvirus, VS-calicivirus |
| **Common Concurrent Diseases** | Familial hyperlipidemia in miniature schnauzers |
| **Clinical Signs** | Anorexia  
Vomiting  
Weakness  
Abdominal pain  
Dehydration  
Diarrhea |
| **Clinical Signs** | Lethargy  
Anorexia/decreased appetite  
Dehydration  
Weight loss  
Icterus  
Vomiting  
Fever  
Abdominal pain  
Diarrhea  
Palpable abdominal mass |
| **CBC** | Neutrophilia with left shift |
| **Chemistry Profile** | Increased liver enzymes  
Azotemia  
Electrolyte imbalances  
Hyperbilirubinemia  
Hypercholesterolemia |
| **Chemistry Profile** | Increased liver enzymes  
Hyperbilirubinemia  
Hyperglycemia  
Hypoglycemia |
| **Amylase and Lipase** | 55% sensitive  
Specific if 2–3 times above the upper limit of the reference interval  
Trending increases utility |
| **Amylase and Lipase** | Not shown to be useful |
| **Radiographs** | Nonregenerative anemia  
Leukocytosis  
Leukopenia |
| **Radiographs** | Nonregenerative anemia  
Leukocytosis  
Leukopenia |
| **Abdominal Ultrasound** | Up to 68% sensitive  
High specificity with experienced ultrasonographer  
24%–67% sensitive  
73% specific |
| **Abdominal Ultrasound** | 24%–67% sensitive  
73% specific |
| **TLI** | Plasma: Provide clotting factors, antiproteases, α-macroglobulins  
Colloids: Improve oncotic pressure to enhance pancreatic perfusion |
| **TLI** | Plasma: Provide clotting factors, antiproteases, α-macroglobulins  
Colloids: Improve oncotic pressure to enhance pancreatic perfusion |
| **Pancreas-Specific Lipases** | Fluids & Electrolytes: Rehydration, pancreatic perfusion, correct electrolyte and acid-base imbalances  
**Fluids & Electrolytes:** Provide clotting factors, antiproteases, α-macroglobulins  
**Colloids:** Improve oncotic pressure to enhance pancreatic perfusion |
| **Pancreas-Specific Lipases** | **Antacids:** If evidence of gastrointestinal bleeding  
**Antacids:** If evidence of gastrointestinal bleeding |
*Listed in order from most to least frequent findings. For canine clinical signs, CBC and chemistry profile, see reference 14.  
For feline clinical signs, CBC and chemistry profile, see reference 6.  
See page 4 for references.
Clinical Utility of the SNAP® fPL™ Test

Diagnosis
In a recent study, the Spec fPL® Test had a sensitivity of 79% for diagnosing pancreatitis in cats and a specificity of 80% for ruling out pancreatitis. The SNAP fPL Test is a pet-side version of the Spec fPL Test that uses IDEXX SNAP® ELISA technology. The SNAP fPL Test is part of a growing family of IDEXX SNAP tests used by thousands of veterinarians worldwide.

The SNAP fPL Test uses the same assay reagents as the Spec fPL Test and was designed to align with the Spec fPL Test but displays results in 10 minutes. In fact, an analysis of 500 cats reveals that the SNAP fPL Test has a 92% agreement with the Spec fPL Test for the identification of normal patients (≤3.5 µg/L), 82% agreement for identification of abnormal patients (>3.5 µg/L) and a 96% agreement for identification of patients with levels consistent with pancreatitis (>5.4 µg/L).

The SNAP fPL Test has been optimized to be a sensitive screening test for pancreatitis and, therefore, provides abnormal results for any sample above the Spec fPL Test's reference range of 3.5 µg/L.

The test result is displayed as a colored sample spot that must be compared to the reference spot. If the color intensity of the sample spot is lighter than the color intensity of the reference spot, then the SNAP fPL concentration is normal. If the color intensity of the sample spot is equal to or darker than the reference spot, then the SNAP fPL concentration is abnormal.

IDEXX Reference Laboratories’ Spec fPL Concentration Compared to SNAP fPL Results

<table>
<thead>
<tr>
<th>Spec fPL</th>
<th>0</th>
<th>Normal</th>
<th>3.5</th>
<th>Elevated</th>
<th>5.4</th>
<th>Consistent with Pancreatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNAP fPL</td>
<td>Normal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Abnormal</td>
</tr>
</tbody>
</table>

Sample spot is lighter than reference spot.
Sample spot is the same color as reference spot.
Sample spot is darker than reference spot.

*Spec fPL concentration measured in µg/L.

Concurrent conditions
As previously noted, it is very common for cats with pancreatitis to have other concurrent conditions. The term “triaditis” has been used to describe the complex of cholangitis, inflammatory bowel disease and pancreatitis. Hepatic lipidosis and pancreatitis commonly occur together. Chronic pancreatitis is identified at necropsy in approximately 50% of diabetic cats. Therefore, it is recommended that a Spec fPL test be performed in cats with liver and/or intestinal disease and in newly diagnosed and hard to regulate diabetic cats. Similarly, a serum cobalamin (vitamin B₁₂) concentration should be performed in cats with pancreatitis to look for evidence of intestinal disease.

Monitoring
Because of the sensitivity for pancreatic inflammation and the tight precision of the assay, Spec fPL concentrations may be helpful for monitoring cats with pancreatitis. In cats with acute pancreatitis, it may be useful to evaluate the Spec fPL concentration every few days during hospitalization and at recheck visits. In cats with chronic pancreatitis, monitoring the Spec fPL concentration to assess the response to treatment or management changes (e.g., introduction of corticosteroid therapy) may be valuable.

Prognosis
The prognosis for cats with pancreatitis is directly related to the severity of the disease. Patients with mild chronic pancreatitis may do well long-term but may also develop intermittent episodes of severe disease. Patients with acute, severe disease, especially if systemic complications are present, have a poor prognosis. Pancreatitis may complicate management of concurrent diseases, such as diabetes mellitus, in cats. It also has been shown that cats with concurrent acute pancreatitis and hepatic lipidosis have a poorer prognosis than cats with hepatic lipidosis alone. Therefore, diagnosis and management of the pancreatitis may be critical to the successful management of these other conditions.

For more information about feline pancreatitis diagnosis and treatment, go to idexx.com/felinepancreatitis.

Learn More About the SNAP fPL Test as a Diagnostic Tool for Your Practice
If you have any questions regarding the SNAP fPL Test or how to interpret test results, please call our team of internal medicine specialists at 1-888-433-9987. To order, contact your authorized IDEXX distributor or call 1-800-355-2896.
References


16. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA.

The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical presentation and complete laboratory data. With respect to any drug therapy or monitoring program, you should refer to product inserts for a complete description of dosages, indications, interactions and cautions.