Pancreatitis in cats – overcoming suspected treatment challenges

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Pancreatitis and diabetes mellitus: what came first?

The relationship between diabetes mellitus and pancreatitis is complex. Chronic pancreatitis will result in islet cell loss, but, interestingly, hyperglycaemia may cause pancreatic inflammation (Zini et al, 2010).

Diabetic cats with concurrent pancreatitis should be closely monitored due to fluctuating insulin requirements. Requirements may drop precipitously during periods of remission from the pancreatitis and owners should be familiar with the signs of hypoglycaemia, with home monitoring of blood glucose encouraged.

Pancreatitis is common in cats and likely under-diagnosed, in part, due to difficulties in achieving a diagnosis and the condition’s range of severity.
Pancreatitis in cats is under-diagnosed; many present with subtle clinical signs of anorexia and lethargy. Abdominal pain and nausea can be hard to appreciate, but should be assumed and treated.

Despite no formal classification system existing for feline pancreatitis, clinically and histologically it tends to be divided into two forms:

- Acute pancreatitis (AP): necrotising or suppurative pancreatitis with associated peripancreatic fat necrosis often associated with severe clinical signs in patients (Figure 1).
- Chronic pancreatitis (CP): lymphocytic pancreatitis with fibrosis and acinar atrophy, which tends to be associated with less severe clinical signs.

Clinical signs are often vague and non-specific, and diagnosis may be presumptive, with a histological diagnosis rarely made.

This article will discuss the causes and management of pancreatitis. For more information on diagnosis, readers are referred to Bazelle and Watson, 2014.

**Causes**

The aetiology of pancreatitis in cats is generally unknown. Associations with infectious diseases are sporadically reported (Baral, 2012), and trauma and ischaemia are known to result in acute pancreatitis (Mansfield, 2016). However, it is the link between pancreatitis, inflammatory bowel disease (IBD) and cholangitis that has led to the use of the term “triaditis” and studies have confirmed the association between these conditions (Weiss et al, 1996; Callahan Clark et al, 2011).

In cats, the common bile duct and pancreatic duct share a common connection into the duodenal papilla, and it is hypothesised reflux of bile or intestinal contents into this shared duct may trigger pancreatic inflammation.
The role of bacteria in pancreatitis in cats remains uncertain. Studies using fluorescence in situ hybridisation have shown bacteria (Streptococcus species and Escherichia coli) in the pancreas in 35 per cent of cases of pancreatitis (Simpson et al, 2011), but the cause and effect relationship remains unclear.

While the cause of pancreatitis is often unknown and not specifically treatable, clinicians must manage the clinical signs and physiological consequences, which can be done successfully in many cases.

**Treatment**

![Figure 2](image-url) Considerations in the management of pancreatitis.

Unfortunately, in the majority of cases, no treatment will resolve the inflammation in the pancreas. Management is, therefore, symptomatic and supportive. Four main areas should be considered, including analgesia, antiemetic therapy, fluid therapy (including correction of electrolyte abnormalities) and nutrition (Figure 2).

Additionally, therapy of any associated conditions – such as diabetes mellitus (Panel 1), cholangitis or IBD – must be instigated.

In the author’s experience, omitting just one aspect of management can significantly delay in recovery and result in further deterioration, in some cases. For example, providing analgesia, but leaving the cat suffering nausea, will lead to ongoing malnutrition, which can reduce immune function and cause hepatic lipidosis.

Patients should be closely monitored and treatment adjusted according to individual patient response. No “one size fits all” protocol exists. As mentioned, pancreatitis varies in severity and, hence, the intensity of treatment required.
**Analgesia**

Abdominal pain is rarely clinically obvious in cats, but we know in humans pancreatitis is an extremely painful condition and should assume as much in cats.

Use of a pain scoring system for hospitalised feline patients, including those with pancreatitis, is strongly recommended (Calvo et al, 2014).

Concerns have been raised historically regarding the use of some opioids in pancreatitis cases, but this is no longer accepted and opioids are recommended. Cats with AP may require methadone, and continuous rate infusions (CRIs) of ketamine and fentanyl, for example, can be used for those with refractory abdominal pain.

For many cats with less severe AP, or those with CP, buprenorphine is effective and can be given transmucosally by the owners at home after discharge.

**Antiemetic therapy**

While neglecting analgesia will result in ongoing inappetence, so will failure to control nausea.

As with abdominal pain, the only sign of nausea may be inappetence, but given the evidence from other species, and response to antiemetic treatment, in the author’s opinion, nausea should simply be assumed and treated in all cases.

Maropitant is a neurokinin one receptor antagonist that blocks centrally mediated and peripherally mediated emesis. It may also have visceral analgesic properties (Niyom et al, 2013) and is considered a good first choice for the cat with pancreatitis. Other options include five-hydroxytryptamine3 antagonists, such as ondansetron.

Although metoclopramide has been considered less effective in cats than dogs, it may have a use in cases of pancreatitis as a prokinetic to manage associated functional ileus particularly noted in cats with AP; a CRI of metoclopramide, as well as maropitant, may be effective.

**Fluid therapy**

Fluid and electrolyte imbalances are likely in cats with AP and hypocalcaemia has been associated with a poorer prognosis (Dias and Carreira, 2015). Hypocalcaemia should be treated if present with a calcium gluconate infusion. Hypokalaemia is also common and seen in both AP and CP, so levels should be assessed if possible.

Ongoing administration of potassium-deficient fluids to inappetent cats is a recipe for this electrolyte abnormality, with resultant ongoing inappetence and weakness. Correction of volume...
deficits is vital to maintain pancreatic perfusion and fluid therapy with crystalloids, supplemented with an appropriate amount of potassium, should be promptly initiated – particularly in cats with AP.

Rather than using an arbitrary multiple of maintenance requirements, fluid therapy should be based on an assessment of dehydration and intravascular fluid volume deficits – both of which may be present in the same patient.

Poor pulse quality, hypotension, tachycardia or bradycardia, pallor and prolonged capillary refill time may indicate hypovolaemia and a skin tent, tacky mucous membranes and sunken eyes are seen with variable degrees of dehydration.

Response to fluid therapy should be regularly reassessed and rates adjusted.

**Nutrition**

Historically, food was withheld from cats and dogs with pancreatitis.

However, the recommendation for both humans and animals is to provide nutrition once vomiting is controlled. Early enteral nutrition is a treatment priority for cats with pancreatitis. At presentation, most cats will have been inappetent for several days, placing them at risk of hepatic lipidosis.

As mentioned, pain, nausea and fluid and electrolyte imbalances must be aggressively managed, but if, despite this, cats are not able to meet their resting energy requirements (RERs) voluntarily then it may be necessary to place a feeding tube.

**Figure 3.** Early enteral nutrition is important in cases of pancreatitis in cats and feeding tubes may be required.

Naso-oesophageal feeding tubes (Figure 3) can be very useful in cats with pancreatitis, to provide

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nutrition for several days (Klaus et al, 2009).

For those with more prolonged inappetence – perhaps with co-morbidities, such as cholangitis or lipidosis – an oesophagostomy tube might be indicated.

Opportunities to place an oesophagostomy tube should be taken if ongoing reduced voluntary intake is likely – for example, a cat with suspected IBD and pancreatitis undergoing intestinal biopsy. See Panel 2 for more information on what diet to feed.

**Other treatments**

Many cats with pancreatitis are treated with antibiotics, but is their use justified? The author would use antibiotics to treat cases of AP where a risk of colonisation of the pancreas from the gastrointestinal tract exists and cats with concurrent neutrophilic cholangitis, but different clinicians will have different opinions on this controversial area. Certainly, if the cat is pyrexic, has a left-shifted neutrophilia or evidence of gastric ulceration (melaena), a broad-spectrum antibiotic, such as amoxicillin clavulanate, is indicated.

Additional treatments may include:

- Vitamin B<sub>12</sub> injections if concurrent IBD is identified.
- Antacids, which may be useful in some patients. Ranitidine, in particular, has prokinetic effects, which means they may be useful, such as metoclopramide in cases of ileus, which can be severe in cases of AP.

Pancreatic enzymes have been used by clinicians in cases of CP, without an evidence base, but with anecdotal success, in some cases.

Corticosteroids are not indicated in the management of pancreatitis in general, although they may have a place in histologically diagnosed chronic lymphocytic cholangitis if contraindications are not present.

**Conclusion**

Pancreatitis is a common disorder in cats and often associated with other conditions, such as IBD and cholangitis. Management should include control of pain and nausea, correction of fluid and electrolyte abnormalities and provision of nutrition.

Attention to each aspect of management is important, as well as frequent monitoring and readjustment of therapy based on response.
• Some drugs mentioned are used under the cascade.

PANEL 2

Diet and pancreatitis – what should you be feeding?

Early enteral nutrition is a priority in cats with pancreatitis and no evidence exists to suggest fat restriction is beneficial in this species. Points to consider include:

• Diet choice may be limited by tube diameter in cats with feeding tubes and, as such, a recovery formulation is appropriate for inappetent cats.
• Diet choice for intercurrent disease might take priority – for example, a single-source protein or hypoallergenic diet for inflammatory bowel disease and low carbohydrate, high protein diet for diabetes mellitus.
• Do not introduce diets for long-term feeding while the patient is unwell or hospitalised as this might create food aversions.
• Nursing care is vital, offering small amounts of warmed and tempting food in a low stress environment, for example.
• Appetite stimulants, such as mirtazapine, might be useful for cats recovering from pancreatitis, and in which pain and nausea are well controlled.
• Anecdotally, some cats do better on a lower fat diet – particularly during a flare-up of chronic pancreatitis, but evidence behind this approach is lacking.

References


