History
Six months ago, a 14-year-old outdoor European Shorthaired cat presented with intermittent vomiting, diarrhoea and weight loss. The cat lived outdoors and occasionally stayed at boarding kennels. All food had been refused for three days. The symptoms started approximately two years earlier but the animal was first taken to a veterinarian six months earlier. Faeces examination (bacteriology, mycology, Giardia) gave no clues about the cause of the illness. Ultrasonography and radiography showed no abnormalities. A gastroscopy with a biopsy of various stomach mucosa samples did not provide any clear-cut pathological findings either and blood work done four months ago (kidney values, liver enzymes and haematology) was within normal reference ranges.

Examination
The cat weighed 4.5 kg when presented to us. According to the animal’s owner, it weighed 7.5 kg two years ago. At the time of presentation, the cat was vomiting yellow foam every day and cat food on rare occasions. The past three days, the cat had not eaten and had drunk only a slight amount of water. The pet owner felt that the cat was not as active and lively as before, and had withdrawn a great deal. Intermittent diarrhoea occurred approximately 2-5 times a month. However, faeces were normal at present. Clinical examination did not reveal any particular findings with the exception of low-level dehydration. Visual examination, palpation and auscultation did not reveal anything about the origin of the illness.

Diagnostic tests
A SNAP® Giardia Test from a faecal sample was negative. The blood examination performed in the veterinary clinic (see Table 1: Blood count (CBC), general health profile, T4 and electrolytes using the IDEXX VetTest® Analyser, IDEXX SNAP® Reader, IDEXX VetAutoread™ Haematology Analyser and IDEXX VetLyte® Electrolyte Analyser) revealed nothing remarkable with the exception of leukocytosis and hyperglycaemia. No pathological findings were revealed by radiography or ultrasound. Blood and faeces samples were sent to IDEXX Vet·Med·Lab to run a Spec fPL® test (feline pancreas-specific lipase), fructosamine value and check for feline coronavirus (fCoV) with a PCR test (see Table 2).

Treatment
The cat was hospitalized due to its lack of appetite and dehydration. The cat was placed on an intravenous saline drip (NaCl 0.9 %). A diagnosis could not yet be made from the findings so far, but based on the preliminary report and prior examinations (ultrasonography, radiography and gastroscopy), a tentative diagnosis of chronic recurrent pancreatitis was made. There is no known causal therapy. We treated the patient with prednisolone 2.5 mg/kg subcutaneously and metronidazole 2 x daily 10 mg/kg per os. We used metronidazole for its antibiotic and immunomodulatory properties. Due to its bitter taste, the metronidazole was administered with force-fed hypoallergenic tinned cat food. It is not essential to administer hypoallergenic food since no relationship between food allergens and chronic pancreatitis has been described. However, based purely on my own subjective experience, I would recommend using hypoallergenic food.
The cat did not vomit during the first 24 hours at the clinic, nor was the administered food regurgitated. After 24 hours, we received the results for the feline pancreas-specific lipase test (Spec fPL®). The lipase level was highly elevated at 30 μg/l (reference range of < 3.5 μg/l), which enabled us to make a diagnosis of pancreatitis. After a while, the patient started eating again and was sent home after three days at the clinic.

Diagnosis
Chronic pancreatitis.

Additional therapy
Prednisolone was continued at a daily dose of 2 mg/kg b.i.d. Since the hypoallergenic food was not well received, the pet owner switched to conventional cat food directly after discharge. After two weeks, the prednisolone was reduced to 1 mg/kg s.i.d.

Therapy monitoring
The feline pancreas-specific lipase (Spec fPL®) was checked three times at four-week intervals:

<table>
<thead>
<tr>
<th>Time</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date admitted</td>
<td>30 μg/l</td>
</tr>
<tr>
<td>Week 4</td>
<td>17 μg/l</td>
</tr>
<tr>
<td>Week 8</td>
<td>9 μg/l</td>
</tr>
<tr>
<td>Week 12</td>
<td>5 μg/l</td>
</tr>
</tbody>
</table>

Follow-up
Six months after initial presentation, the cat was brought to our practice again. The cat was in poor general health, and the Spec fPL® measurement revealed a level of 15 μg/l. Due to the cat’s advanced age and poor prognosis, the cat was euthanised at the owner’s request.
THE FELINE PANCREAS

In cats, the pancreas is approximately 12 cm long, 1-2 cm wide, weighs an average of 8-10 g and comprises approximately 0.27% of the overall body mass. It is V-shaped and lies between the layers of serous membrane of the greater omentum and the Mesoduodenum descendens. It consists of a short middle piece in the Flexura duodeni cranialis, the Corpus pancreatis, to which are connected the right (Lobus dexter pancreatis) and left (Lobus sinister pancreatis) lobes of the pancreas. Two excretory ducts drain pancreatic juices. Together with the Ductus choledochus, the main excretory duct of the liver, the Ductus pancreaticus ends at the Papilla duodeni major in the Ampulla hepatopancreatica, approximately 2-3 cm caudal to the pylorus. The Ductus pancreaticus accessorius, which consists of numerous small ducts (some of which anastomose with the Ductus pancreaticus), terminates at the Papilla duodeni minor, which is 1.5-2 cm caudal to the duodenal papilla. It occurs in approximately 20% of cats. There are rare cases of a pancreatic bladder occurring next to the gall bladder and communicating with it.

Imaging the pancreas

A normal pancreas has the density of soft tissue and is difficult or impossible to identify in X-rays since it is small and overlies other soft tissue organs. Diseases of the pancreas are therefore difficult to identify in an X-ray. Various changes that are visible on a radiograph have been described for pancreatitis; however, none of these signs are reliable. The most frequent changes visible in radiographs are hazy shadowing and a loss of detail in the cranial, right abdomen. This finding must be critically assessed in context, since a similar finding is also observed in most healthy animals. This is caused by the overlap of many closely neighbouring, contacting, dense soft tissue structures. Space-occupying processes in the region of the pancreas are more easily located because they displace the Colon transversum in a caudal direction and the Duodenum descendens in a lateral direction. The normal pancreas is difficult to identify in cats by sonography. Frequently, the stomach and/or duodenum contain so much gas that acoustic shadowing results. The physiological pancreas is a thin gland with difficult-to-define margins and is usually surrounded by fat. It is physiologically more echo-rich than the renal cortex and liver. Acute or chronic diseases can only be distinguished by histological examination of pancreas biopsies.

Chronic pancreatitis

Feline chronic pancreatitis occurs very frequently. It can manifest in a severe form with high mortality. Chronic pancreatitis is a permanent inflammatory process of ambiguous aetiology. A distinction is drawn between two courses of illness: mild, chronic pancreatitis leading to pancreatic fibrosis, and chronic recurrent or chronic active pancreatitis associated with recurring attacks.

Symptoms

Similarly to acute pancreatitis, the symptoms are mainly non-specific. Most cat owners report increased vomiting, apathy and weight loss. Statistically, the following symptoms occur, listed in order of decreasing incidence: lack of appetite, lethargy, dehydration, weight loss, hypothermia, vomiting, icterus, fever, abdominal pain and diarrhoea. Similarly to acute pancreatitis, a severe attack of chronic recurring pancreatitis can be associated with necrosis of the pancreas. When there is clinical suspicion of acute pancreatitis, chronic pancreatitis should always be considered in the differential diagnosis. In very rare cases, both courses of chronic pancreatitis can develop into exocrine and endocrine pancreatic insufficiency due to the loss of pancreatic tissue from inflammation associated with related symptoms of pronounced digestive problems and diabetes mellitus.

Diagnosis

Diagnosing chronic pancreatitis poses a challenge to veterinarians since the symptoms do not necessarily indicate a disturbance in this gland. The clinical picture for cats with pancreatitis is much less specific in comparison to dogs. Ultrasound and radiographic examinations can provide indications, but cats with acute and severe symptoms of pancreatitis frequently have unremarkable ultrasounds and X-rays.

Laboratory findings

The results of standard laboratory tests can be normal or non-specific for cats with pancreatitis. The serum activity of amylase and lipase is not helpful when diagnosing pancreatitis in cats. Determining the level of feline pancreas-specific lipase (Spec fPL®) is the most sensitive way of diagnosing pancreatitis. Sensitivity is 100% for moderate to severe pancreatitis and 54% for mild pancreatic inflammation. Accordingly, overall sensitivity is 67%. Specificity for healthy cats is 100%. In symptomatic animals with a histologically unchanged pancreas, specificity is 67%. Overall specificity is 91%.
References:


STEINER JM. Small animal gastroenterology. Schlütersche, 2008

