









Case Report

## Pancreatic multifocal necrosis in female cat: case report

Necrose multifocal pancreática em gata: relato de caso

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### ABSTRACT

Pancreatitis is the inflammatory process of the exocrine pancreas, with necrosis and fibrosis as the main structural alterations. Felines may present the acute and chronic forms of the disease. A domestic, female, undefined feline (srd) was taken to a Private Veterinary Hospital in the city of Guarulhos, state of São Paulo. The animal had signs of apathy, prostration, inappetence, anorexia and bilateral exposure of the third eyelid. After the physical examination, blood was collected for haematological and biochemical exams. Abdominal ultrasonography was also requested, where reverberation was detected in the region of the intestinal loop, hyperechogenicity of the duodenal wall and reverberation of the pancreas. According to the results of the blood tests and ultrasonographic findings, we opted for exploratory laparotomy. During the surgical procedure a pancreatic fragment was collected for histopathological analysis. The histopathologic result was compatible with moderate multifocal pancreatic necrosis. Therefore, was instituted antibiotic therapy with Enrofloxacin (5 mg / kg, BID, IM for 5 days), analgesia with Tramadol Hydrochloride (2 mg / kg, BID, IV for 4 days) and Betamethasone (0.3 mg / kg, SID, IV). After the beginning of treatment with corticosteroid, the animal began to improve and eat. Many cases are diagnosed as acute or chronic pancreatitis only due to changes in pancreatic enzymes and ultrasonographic changes in the pancreas, using histopathological examination, which is a more instructive technique. It is very likely that pancreatic necrosis is not a pathology of low incidence, but rather poorly diagnosed due to difficulties in performing a biopsy.

### RESUMO

A pancreatite é o processo inflamatório do pâncreas exócrino, tendo a necrose e a fibrose como principais alterações estruturais. Felinos podem apresentar as formas aguda e crônica da doença. Foi levado a um Hospital Veterinária Particular na cidade de Guarulhos, estado de São Paulo, um felino doméstico, fêmea, sem raça definida (srd). O animal apresentava sinais de apatia, prostração, inapetência, anorexia e exposição bilateral da terceira pálpebra. Após o exame físico, foi feita coleta de sangue para realização de exames hematológicos e bioquímicos. Foram solicitados ainda ultrassonografia abdominal, onde foi detectada reverberação em região de alça intestinal, hiperecogenicidade de parede duodenal e reverberação de pâncreas. De acordo com os resultados dos exames de sangue e os achados ultrassonográficos, optou-se pela laparotomia exploratória. Durante o procedimento cirúrgico foi coletado um fragmento pancreático para análise histopatológica. O resultado do histopatológico foi compatível com necrose pancreática multifocal moderada. Sendo assim, foi instituída antibióticoterapia com Enrofloxacina (5 mg/kg, BID, IM, durante 5 dias), analgesia com Cloridrato de Tramadol (2 mg/kg, BID, IV, durante 4 dias) e Betametasona (0,3 mg/kg, SID, IV). Após o início do tratamento com corticosteroide, o animal começou a apresentar melhora, voltando a se alimentar. Muitos casos são diagnosticados como pancreatite aguda ou crônica apenas por conta das alterações em enzimas pancreáticas e alterações ultrassonográficas em pâncreas, lançando mão do exame histopatológico, que é uma técnica mais elucidativa. Muito provável que a necrose pancreática não seja uma patologia de baixa incidência, e sim, pouco diagnosticada, devido às dificuldades em se realizar biópsia.

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## INTRODUCTION

Cats are discrete and independent animals. These characteristics may make it difficult to detect diseases in this species, especially when it comes to diseases with signs as non-specific as pancreatitis. In addition, the lack of more accurate diagnostic methods complicates the identification of the disease.

Pancreatitis is the inflammatory process of the exocrine pancreas, with necrosis and fibrosis being the main structural alterations, with fibrosis being an irreversible alteration to which it may be accompanied by a minimal inflammatory component (XENOULIS, 2015).

Felines can present the acute and chronic forms of the disease, being very similar to canine pancreatitis (MANSFIELD, 2012; WATSON, 2012), but the clinical signs are nonspecific, which makes diagnosis difficult (BAZELLE; WATSON, 2014; XENOULIS, 2015). It is not an uncommon disease in cats, being relatively well diagnosed in *post-mortem* examination, including in apparently healthy animals (DE COOK et al., 2007).

Many diagnostic methods are of limited use, and clinical data should be associated with laboratory and ultrasound imaging. However, the definitive way to diagnose pancreatitis is still through histopathological examination (XENOULIS; STEINER, 2008).

New research and studies are necessary to obtain more accurate methods of ante-mortem diagnosis, considering that not all patients have clinical conditions to undergo a biopsy of the pancreas for subsequent histopathological examination.

Little has been reported in the literature on multifocal pancreatic necrosis, so the present work aims to report a case of multifocal pancreatic necrosis in a feline, which was treated in the city of Guarulhos, state of São Paulo.

## CASE-REPORT

A domestic, female, undefined feline (srd), 10 years of age and 3 kg of weight was attended at the Private Veterinary Clinic in the city of Guarulhos, state of São Paulo. The animal had signs of apathy, prostration, anorexia and bilateral exposure of the third eyelid

Physical examination revealed moderate skin turgor, enlarged submandibular lymph nodes, Mucous with low pigmentation rate, and tachycardia and tachypnea due to manipulation stress.

After the physical examination, blood was collected for haematological, biochemical and Glycemia. In the results of the examinations, the number of platelets was found to be 57,000 / mm<sup>3</sup> (reference values 300-800 / mm<sup>3</sup>), evidencing a thrombocytopenia.

There was an increase in the concentration of the Alanine Aminotransferase enzyme which was at 133 IU / L (reference values 10-88 IU / L), the urea concentration was 74.6 mg / dL (reference values 43-64 mg / dL ), showing a picture of uremia installed. Amilase dosage was at 3,351 IU / L (reference values 500-1800 IU / L), Lipase at 11 IU / L (25-375 IU / L) and glycemia at 113.8 mg / dL (73-134 mg / dL).

Immediately after the results of the exams, fluid therapy was instituted with physiological solution NaCl 0.9% in the volume of 250ml. Abdominal ultrasonography was also requested, where reverberation was detected in the region of the intestinal loop, hyperechogenicity of the duodenal wall and reverberation of the pancreas (Picture1).

Picture 2. Pancreas and Duodenum in ultrasound image.

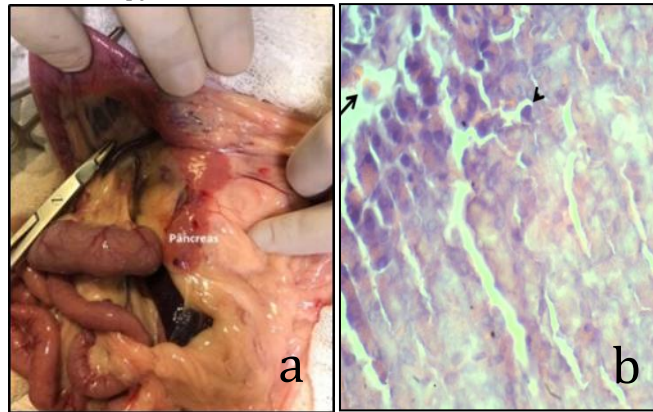


Source: author's collection.

According to the results of blood tests and sonographic findings, such as expressive reverberation of the pancreas, was opted for exploratory laparotomy. During the surgical procedure a pancreatic fragment was collected for histopathological analysis (Picture 2).

The histopathologic result was compatible with moderate multifocal pancreatic necrosis. Therefore, was instituted antibiotic therapy with Enrofloxacin (5 mg / kg, BID, IM for 5 days), analgesia with Tramadol Hydrochloride (2 mg / kg, BID, IV for 4 days) and Betamethasone (0.3 mg / kg, SID, IV). The animal was submitted to a diet with restricted carbohydrate and fat contents due to the condition of the pancreas and due to the risk of liver lipidosis caused by a prolonged fasting. Because of the lack of appetite, the feeding was initially performed by esophageal catheter. After starting treatment with corticosteroids, the patient began to improve, returning to eat voluntarily, becoming more active and no longer requiring an esophageal catheter. With this, there was repositioning of the third eyelid.

Picture 2. Congestive appearance of the Pancreas during laparotomy (a). Photomicrograph of the pancreas fragments. Areas of necrosis. H-E. Obj 40x (b), where the arrowhead indicates the presence of cytoplasmic vacuoles excluding the cell nucleus, and the arrow indicates cells with pyknotic nuclei.



Source: author's collection.

After 15 days of treatment, the animal was clinically well, and the laboratory tests were repeated. According to the hematological examination, the animal still had thrombocytopenia (156,000 platelets /  $\text{mm}^3$ ) and the total leukocyte count was 18,160,000 /  $\text{mm}^3$  (reference values 5.5-19.5 thousand /  $\text{mm}^3$ ). In the biochemical measurements, normalization of Alanine Aminotransferase (84.0 IU / L) was observed, the increase of Amylase (3,566 IU / L) progressed and the previous values of Lipase (11 IU / L) were maintained. Measurement of Glycosylated Fructosamine was requested, where it was present at a concentration of 503 Micromol / L (reference values 219-347 Micromol / L), suggesting endocrine pancreas impairment.

## DISCUSSION

The diagnosis of pancreatitis is quite difficult, since there is not always a definition of its etiology, the clinical signs are non-specific, and hematological and biochemical tests are not enough to close a diagnosis. Histopathological examination is the most accurate in the diagnosis of the disease, being classified as a gold standard (DE COOK et al., 2007; SCHNAUß et al., 2018; WATSON, 2015) and can be classified as acute pancreatitis (AP) or chronic pancreatitis (PC), according to the histopathological lesions observed (XENOULIS et al., 2008).

In the present case report, alterations found in the collected pancreatic tissue were consistent with moderate multifocal necrosis, necrosis being a finding related to the acute form of the disease (JUBB, 1993; LACK, 2003), although the chronic form is more frequent (CARDOSO, 2015; XENOULIS; STEINER, 2009). In the hematological examinations, there was presence of leukocytosis and thrombocytopenia, both of which were found in felines with pancreatitis (CARDOSO, 2015; XENOULIS; STEINER, 2009).

Regarding the biochemical parameters, an increase in the concentrations of Alanine Aminotransferase, Urea, Amylase and Glycosylated Fructosamine was observed. There was a decrease in Lipase levels to below-normal

levels. Some studies have reported an increase in the activity of Alanine Aminotransferase, which may be elevated in both felines with PA or PC (HILL; VAN-WINKLE, 1993; FERRERI et al, 2003), resulting from simultaneous liver disease.

Pre-renal azotemia affects felines with PA, whereas the renal form affects the animals in the chronic phase, being associated with the presence of Diabetes (CANEY, 2013). Comparing the sensitivity of different diagnostic tests for pancreatitis in felines, Gerhardt et al. (2001) verified the presence of azotemia in seven (33%) of the 21 animals studied.

Felines with Diabetes may present pancreatic changes, which was evident in a study by Goossens et al. (1998), who performed necropsy in 37 cats with Diabetes Mellitus, observed exocrine pancreas involvement in 73%, islet abnormalities in 89%, and endocrine and exocrine abnormalities in 57%. The glycemia was measured using a human glycosimeter, which justifies the value within normality in the first collection, because the ideal would be to use a veterinary glycosimeter, which provides more accurate values, since it is calibrated specifically for the animal species. The increase in Glycosylated Fructosamine 15 days after initiation of the treatment leads to the suspicion that the patient in question may also have Diabetes, since this test monitors the glycemia in the last weeks, whereas the glucose test only provides information on glucose levels in the time. The presence of azotemia and the increase in Glycosylated Fructosamine give evidence of Diabetes in the patient.

Pancreatic infections may be due to some pathogens, such as feline infectious peritonitis virus, *Toxoplasma gondii* and *herpesvirus* (DUBEY; CARPENTER, 1993; SMART et al., 1973; WEISS; SCOTT, 1981), it is important to emphasize that felines with AP or PC tend to have a higher incidence of pancreatic infections (SIMPSON et al., 2011; WIDDISON et al., 1994). Due to the leukocytosis presented by the patient, antibiotic therapy based on Enrofloxacin at the dose of 5 mg / kg, IM was used, the same dose being described by Xenoulis e Steiner (2009), which further states that this antibiotic is a good

alternative in the treatment of infections pancreas, because it has the ability to penetrate the pancreas. Even the pain being a common feature of feline pancreatitis, it is difficult to evaluate (ROBERTSON, 2008). Opioids are the best choice of drugs for the treatment of abdominal pain due to pancreatitis (ROBERTSON, 2008; WILLIAMS, 1996), with Tramadol being the drug of choice, as well as promoting analgesia in moderate to severe pain, used for both acute and chronic pain cases.

Glucocorticoids can be used in cats affected by pancreatitis and are useful in acute and even mild cases with concomitant conditions in the intestine and / or liver (XENOULIS; STEINER, 2009; WHITTEMORE; CAMPBELL, 2005). Betamethasone was used, in which a good response was obtained from the patient, but it is important to emphasize the risks associated with the use of glucocorticoids, as these cause a series of side effects.

### CONCLUSION

Many cases are diagnosed as acute or chronic pancreatitis only because of changes in pancreatic enzymes and ultrasound abnormalities in the pancreas. Usually the clinician uses these data to close the diagnosis, using histopathological examination, which is a more instructive technique. It is very probable that pancreatic necrosis is not a pathology of low incidence, but rather poorly diagnosed, due to difficulties in biopsy, due to the severity of the patient's clinical condition.

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