# CURRENT DATA ON PANCREATITIS IN DOGS

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***Abstract***
*The current study presents current data on the evolution and prevalence of pancreatitis in dogs examined in the Agervet Târgovişte Clinic, Dâmboviţa County. Out of the 573 dogs with digestive disorders, 56 (9.77%) were diagnosed with pancreatitis. Twenty-one patients were male and 35 were female patients, aged 5 to 17 years. The clinical picture was polymorphic, and blood examination showed alterations in biochemical parameters. Based on the history of the clinical data, combined with additional examination data we determined that 17 (30.36%) had acute forms, and 39 (69.64%) had chronic forms. For the diagnosis rapid tests were used to assess the level of the specific pancreatic lipase. Also, histopathological examination was performed. Fibrosis, acinar atrophy and lymphocytic infiltration indicated the chronic form, while the pancreatic cell necrosis and neutrophilic infiltration indicated the acute form.*

***Key words:*** *acute form, chronic form, dogs, pancreatitis*

## INTRODUCTION

Pancreatitis is an inflammatory condition of the pancreas and is the most common disease of the canine exocrine pancreas, but the accurate diagnosis and the reliable treatment of this disease remains a challenge for practitioners (Mix and Jones, 2006). From the clinical point of view pancreatitis can be acute or chronic, and the effects on the patient can be classified as mild or severe, nonfatal or fatal (Simpson, 2006). The signs and symptoms are polymorphic, being dominated by uncharacteristic signs. There are no pathognomonic signs for either of the two forms, the evolution of the signs and symptoms clinic and the clinical results depend on the severity and duration of the inflammatory process, and on the systemic changes caused (Spillmann, 2007). It can be seen in all dogs, but age is a risk factor, so middle-aged and elderly animals are more prone to pancreatitis (Washabau, 2009). The etiology is varied and often unclear, but knowing some risk in the emergence and evolution of pancreatitis in dogs is essential in determining the patient's examination plan.
The present study aimed to assess and determine the prevalence of pancreatitis in the dogs examined at the Agervet-Târgovişte Clinic.

## MATERIALS AND METHODS

In the database of the Agervet-Târgoviște Clinic throughout 2012, 573 dogs with digestive diseases were recorded. For each case we obtained information from the owners concerning the origin, food and lifestyle. The age of the animals ranged between 6 months to 17 years. The animals were examined physically, by imaging exam and haematologically. Rapid tests were used to assess the level of the specific pancreatic lipase (SNAP cPL Test, IDEXX) following the procedure indicated by the manufacturer. For a number of 5 cases post-mortem samples of pancreas were collected, in order to obtain microscopic preparations subsequently stained by usual techniques (HE and van Gieson).

## RESULTS AND DISCUSSIONS

Following the physical examination and the complementary examinations we determined that 56 (9.77%) dogs had diseases of the pancreas. The diagnosis was based on clinical signs, biochemical analyzes, enzymatic tests and histological examination (for 5 dogs). The clinical signs leading to the diagnosis of pancreatitis, supplemented with the results of the complementary tests, were similar to those described in the literature (Watson, 2004; Mix and Jones, 2006; Simpson, 2006; Spillmann, 2007; Xenoulis et al, 2008; Mansourian et al., 2009; Washabau, 2009). The animals diagnosed with pancreatitis were 21 males and 35 females, who ranged in age from 5 to 17 years. Although we did not aim to distribute them specifically on breeds, we determined, however, that the pancreatic disease were found in: mixed-breeds – 14 (25%), Cocker spaniels – 7 (12,5%), Yorkshire terrier – 5 (8.93%), Chow-chow – 5 (8.93%), German shepherd 5 (8.93%), Labrador 5 (8.93%), Pitt-bull –0 4 (7.14%), Bucovina shepherd – 3 (5.35%%), West-Highland Terrier – 2 (3.57%), Shar-Pei – 2 (3.57%), Shih-Tzu – 1 (1.78%), Rottweiler – 1 (1.78%), Caucasian shepherd – 1 (1.78%), Pekingese – 1 (1.78%).

Seventeen dogs (30.36%) had acute form and 39 dogs (69.64%) had chronic forms. The symptoms who pleaded for the inclusion in the acute form of the disease were anorexia (14/17, 82.35%), sudden vomiting (14/17, 82.35%) and abdominal pain (12/17, 70.59%), signs occurred in animals with a good maintenance condition. The animals included in the chronic form had a history, presenting: deviation (33/39; 84.61%), recurrent digestive disorders

(30/39, 76.92%), weakness (28/39, 71.79%), dull hair (19/39; 48.71%), vomiting (14/39, 35.90%), jaundice (9/39, 23.07%), abdominal pain (9/39, 23.07%), pruritus cutaneous (8/39; 20.51 %).

The results of the biochemical blood tests showed: hyperamylasemia (48/56; 85.71%), hyperlipasemia (44/56; 78.57%), azotemia (39/56; 69.64%), hyperglycaemia (37/56; 66.07%), hypercholesterolemia (25/36; 44.64%), increased liver enzymes (23/56; 41.07%), hyperproteinemia (21/56; 37.5%), and hyperproteinemia (15/56; 26.79%). Seventeen (30.57%) patients were registered with diabetes.

The evaluation of specific pancreatic lipase levels by rapid test performed on 10 dogs with acute gastrointestinal signs showed intense staining of the sample spot compared to the control sample spot, which is an inadequate level of specific pancreatic lipase in all patients evaluated by this method. The radiological examination was performed to exclude the presence of more foreign bodies that could trigger acute gastrointestinal signs, or vomiting or abdominal pain. The ultrasound examination showed an enlargement of the pancreas, with a hypoechogenic image, low abdominal collections, pancreatic duct dilation, of the bile ducts and the liver.

There were 5 deaths, two of them had acute forms of the disease, and 3 were recorded with relapses, being included in the chronic form. The hystopathologic examination a showed acute lesions indicated by pancreatic tissue containing areas marked by amorphous eozinophil material present both in the interlobular areas as well as in the intralobular ones, due to massive necrosis, with neutrophil infiltration and adipocytary necrosis. The chronic lesions were represented by lobular atrophy, fibrosis, lymphocytic inflammatory infiltrate, intra-and interlobular ducts contain amorphous plugs, some calcified, representing ductal protein plugs.

Pancreatitis is an inflammatory condition of the pancreas. Previous studies have found that pancreatitis is the more frequent disorder of exocrine pancreas in dogs (Newman et al., 2004; Mix and Jones, 2006; Xenoulis et al., 2008). However, the diagnosis of pancreatitis in dogs remains a challenge for practitioners, being difficult to determine due to the non-specific nature of its clinical signs and the lack of specific and sensitive diagnostic tests (Cordner et al., 2010; Van den Bossche et al., 2010). Obtaining a detailed history, performing a thorough physical examination and carrying out the available tests are essential steps in diagnosing pancreatitis (Xenoulis et al., 2008). The timely diagnosis of pancreatitis is essential because the disease can be associated with significant morbidity and mortality (Mix and Jones, 2006). Resorting to the example in human

medicine, dog pancreatitis were classified into acute and chronic, based on the potential reversibility of the pancreatic histopathological changes (Xenoulis et al., 2008). Other authors classify pancreatic diseases according to the effect on the patient, and there are mild forms and severe forms, non-fatal and fatal (Simpson, 2006). In acute forms the pancreatic changes are reversible after the elimination of the cause of the inflammatory process, while in the chronic form, the long action of the "spinal irritation" determines irreversible structural changes.

The etiology of the disease, whether in the acute or chronic form, is varied, and it often remains unknown, which is called idiopathic pancreatitis (Neiger, 2012). There are a number of potential risk factors leading to pancreatitis and that we must take into account in determining the diagnosis. In the case of acute pancreatitis the following are incriminated: obesity, fatty meals, hiperlipidemia, severe intestinal disease, endocrine disorders (diabetes), systemic infectious diseases (babesiosis), trauma, certain toxins or drugs (Spillmann, 2007; Neiger, 2012). The possible factors incriminated for causing chronic forms are: the genetic predisposition, the existence of immune-mediated processes or the poor healing of acute episodes of pancreatitis (Spillmann, 2007).

The results obtained in this study show the presence of pancreatic disease in adult animals, aged between 5 and 17 years, the age being considered a risk factor in the occurrence of pancreatopathies. Previous studies have reported that the most affected are the middle-aged and old animals (Hess et al., 1999; Washabau, 2009, Watson et al., 2010), our results are similar to these findings.

Most patients affected were half-breeds (25%), followed by Cocker spaniels (12.5%), Yorkshire terrier, Chow-chow, German shepherd and Labrador (8.93% each). Previous studies have found that Yorkshire terriers, Skye terriers and Miniature schnauzers an increased risk of developing pancreatitis, suggesting a hereditary component (Washabau, 2009). In another study, Cavalier King Charles Spaniels, Collies, boxers and cocker spaniels were the most affected species (Watson et al., 2007). The variations can be attributed to the differences in the canine population specific to various geographic areas.

Previous studies report a prevalence varying between 0.8% and 1.46% (Gal., 2011; Thompson et al., 2009). Variations may be due to the different number of cases studied or to the canine population for which the report was made. Our results indicate a high prevalence compared with the previous studies. The actual values concerning the prevalence of pancreatitis is

difficult to determine because of the difficulties faced in the ante-mortem diagnosis (Mix and Jones, 2006), especially in the case of subclinical forms which may remain undiagnosed.

Our results present a variety of clinical signs, being similar to the previous studies (Watson, 2004; Mix and Jones, 2006; Simpson, 2006; Spillmann, 2007; Xenoulis et al, 2008; Ludlow, 2009). Dehydration (97%), anorexia (91%), vomiting (90%), deviation (79%), abdominal pain (58%), diarrhoea (33%) and jaundice (32%) are the most common signs found in previous studies (Hess and al., 1998). And another study reported that vomiting (90%), abdominal pain (58%), dehydration (46%) and diarrhoea (33%) are the most common symptoms found (Ludlow, 2009). These aspects prove the polymorphic nature of the signs and symptoms of pancreatitis, the signs are non-specific and usually transient (Xenoulis et al., 2008). We can not talk about pathognomonic signs for the acute or chronic pancreatitis (Spillmann, 2007).

The blood changes are expressed by a wide variety of physical and biochemical parameters, as shown in the current literature (Simpson, 2006). Similarly to these data, our results prove the presence of such blood variations in the examined animals. According to previous studies, azotemia, hyperglycemias, hypercholesterolemia, an increase in the liver enzymes, are the parameters indicating the presence of pancreatitis (Mix and Jones, 2006; Van den Bossche, 2010). The presence of diabetes mellitus is a risk factor in triggering pancreatitis (Washabau, 2009). The similarity of our results to those in the literature eventually led to a diagnosis of pancreatitis. Moreover, the rapid test results helped confirm the diagnosis established initially in the respective cases. An increased level of lipase and amylase was associated with pancreatitis for a long time, but no predictive value of these parameters could be determined (Mix and Jones, 2006). On the other hand, normal levels of these enzymes can not rule out pancreatitis, previous studies demonstrating the existence of cases in which dogs with pancreatitis had normal values of the amylase and serum lipase (Xenoulis et al., 2008). However we should not neglect the increase in the value of these serum enzymes, some studies suggesting that the value three times bigger than the upper limit of the reference range may be suggestive for the evolution of pancreatitis.

The histopathological examination is considered “the gold standard” for diagnosing pancreatitis, but it is difficult to perform, especially due to reluctance and lack of cooperation of the owners. Our study presents the results obtained in 5 cases of deceases. The lesions obtained following the

histopathological confirmed the initial diagnosis. The veterinary terminology used for the histopathological description of acute or chronic pancreatitis is not standardized (Thompson, 2009), thus the lesional classification of dogs becomes more difficult. Previous studies deem that the presence of acinar atrophy and fibrosis (permanent changes) are the histological key for the classification of the chronic process, while the necrosis of pancreatic cells defines the acute form (Xenoulis et al., 2008). Moreover, previous studies performed in cats have established that the predominance of the neutrophil infiltrate, described as suppurative pancreatitis, pleads for the acute form, while the predominance of lymphocytic infiltrate indicates the chronic form (Hill et al., 1993; Ferreri et al., 2001).

The diagnosis of pancreatitis is difficult to determine, thus a carefully performed physical examination is necessary, which should be supplemented by a detailed history of the case and efficient complementary examinations.

The treatment aimed to restore the function of the pancreas and the alleviation of the abdominal pain. Anti-nausea medication, antispasmodics, fluid-therapy, anti-diarrhoea treatments were used, as well as antibiotics for the animals with fever. In addition to these, a dietary and hygienic treatment, very important in the treatment of pancreatitis, as well as diet food after alleviating the clinical signs are absolutely necessary.

## CONCLUSIONS

Our study shows the presence of two evolutionary forms of pancreatitis, acute and chronic, with a higher prevalence of the chronic form (69.64%) compared to the acute form (30.36%).

The signs and symptoms were polymorphic, being dominated by anorexia, vomiting and abdominal pain.

The biochemical changes revealed alterations in the blood parameters, characterized by azotemia, hyperglycaemia, hypercholesterolemia, hyperamylasemia, hyperlipasemia and increase in the hepatic enzymes.

The evaluation of the specific pancreatic lipase levels by the rapid test and the histopathological examination of the pancreas to the final diagnosis.

The correlation of the symptoms with the results of the complementary examinations is necessary in determining the diagnosis of pancreatic diseases, and the early therapeutic intervention increases the chance of survival of the animals.

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