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PANCREATITIS IN SMALL ANIMALS: HOW TO MAKE THE DIAGNOSIS

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INTRODUCTION

Canine pancreatitis is an inflammation that affects the animal's pancreas, and its onset can be triggered by several factors, such as high-fat consumption, hormonal disorders, circulatory problems, and excess weight, among others, and may even be idiopathic[1]. Pancreatitis can have two forms of presentation: acute, which occurs when the inflammation can be reversible, and chronic, characterized by irreversible inflammation[2]. Its clinical signs vary between vomiting, diarrhea, prayer position (Fig. 1.), loss of appetite, and abdominal pain[1].

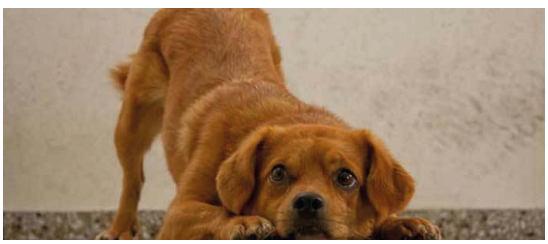

Figure 1: Image of a dog in position showing pain in the abdominal region (Source: NÚCLEO DE ATENDIMENTO VETERINÁRIO DE BELO HORIZONTE)

MATERIAL

Scientific articles, literature reviews, and books published from 1999 to 2020 were consulted in the Scopus, Web of Science, SciELO, and Google Scholar databases.

TOPIC SUMMARY

The pancreas is a mixed glandular organ located in the right epigastric region, immediately next to the duodenum[2]. It is responsible for the production and secretion of digestive enzymes and hormones, such as insulin, glucagon, and somatostatin. Inflammation of this organ is known as pancreatitis (Fig. 2).

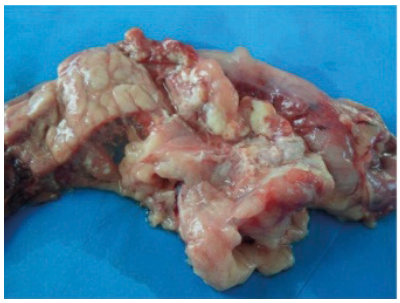

Figure 2: Pancreas with multifocal areas of necrosis, fibrosis, and overactive exudate (Source: PANCREATITE AGUDA EM UM CANINO – RELATO DE CASO)

Pancreatitis is characterized by inflammation, fibrosis, and loss of pancreatic parenchyma, which generally occurs due to incorrect activation of the gland's enzymes[3]. The disease presents a nonspecific condition, usually with gastrointestinal alterations and involvement of other systems, which requires a range of clinical care[4]. An intense autoactivation of trypsin and early and inadequate activation of trypsinogen will result in autodigestion and severe inflammation in the pancreas. In this case, the protective mechanisms are overcome, starting a chain reaction with more activation of trypsin and other enzymes, which accentuates autodigestion and aggravates pancreatitis[5].

Pancreatitis can be divided into two different forms: acute pancreatitis (AP), which occurs when the inflammatory process appears suddenly and can still be reversible, and can also present different degrees of inflammation, edema, ischemia, necrosis, and a prayer position[11]. Chronic pancreatitis (CP) is a continuous inflammation that, in addition to the same symptoms as acute pancreatitis, also presents fibrosis and atrophy of the pancreas, and becomes an irreversible inflammation, that is, the animal will live with the disease for the rest of its life. Necrosis and edema are characteristics of pancreatitis, which can lead to mild to severe abdominal pain, vomiting, dehydration, and anorexia[10].

Other factors can promote inflammation, such as obesity. Although it is not clear whether it actually predisposes or merely contributes to the onset of pancreatitis, breeds predisposed to weight gain are also breeds frequently reported to have pancreatitis[5]. Even though the mechanism has not been fully elucidated, there are common reports of animals developing pancreatitis with a history of irregular diets and being overweight[6]. Some studies report the development of pancreatitis associated with the use of certain drugs. Gaskil & Cribb (2000) mention a study in which 10% of a group of dogs developed pancreatitis after receiving potassium bromide and phenobarbital for the treatment of epilepsy, and only 0.3% developed pancreatitis when treated with phenobarbital alone.[7.]

Some studies believe that local necrosis originates from the action of enzymes and ischemic processes, as there is a great depletion of intravascular volume, vasoconstriction, intravascular coagulation, and increased endothelial permeability, thus resulting in edema of the pancreatic parenchyma, hemoconcentration, and circulatory stasis[8]. In addition to inflammation in the pancreas, the inflammatory process may extend to the stomach, duodenum, colon, and liver. Vasoactive polypeptides are also released into the circulation, causing severe systemic effects associated with pancreatitis, such as hepatocellular necrosis, pulmonary edema, renal tubular degeneration, hypotension, and cardiomyopathy[9].

Pancreatitis is difficult to diagnose, precisely because its clinical signs are very similar to other gastrointestinal diseases. Therefore, the combination of history, the tests described here, and the patient's consultation help to have a more accurate diagnosis. Specific tests to detect the disease are not very sensitive[12]. To obtain an accurate diagnosis, complementary tests are used, such as the complete blood count, which often shows an increase in hematocrit and total plasma proteins, indicating dehydration. A reduction in hematocrit may indicate hemorrhagic foci. Leukocytosis is common in severe pancreatitis; in chronic pancreatitis, there may be leukocytosis or leukopenia. In the biochemical profile, the concentrations of urea and creatinine are important, since azotemia is present in 50% of cases, reflecting dehydration due to vomiting, low fluid intake, or extravasation into the abdominal cavity. Patients may have moderate hyperglycemia, hypoalbuminemia, hypercholesterolemia, and hyperlipidemia. Hepatic inflammation may increase ALT (alanine aminotransferase) and AF (alkaline phosphatase) enzymes, in addition to hyperbilirubinemia. In terms of imaging, radiography is a low-cost initial approach, but ultrasound examination[9,15] is preferable because it provides more detailed images of the pancreas. In AP, it is enlarged, irregular, and inhomogeneous, with hypoechogenicity (Fig. 3), and dilated bile ducts. In CP, the pancreas may not be as visible on examination, but some findings may show a reduced organ, parenchyma with mixed echogenicity, and nodular echotexture. In addition, a test with high specificity[9,14], which is the cPL (canine pancreatic lipase), also known commercially as ELISA, urinalysis, and histopathology can also be used as complementary exams.

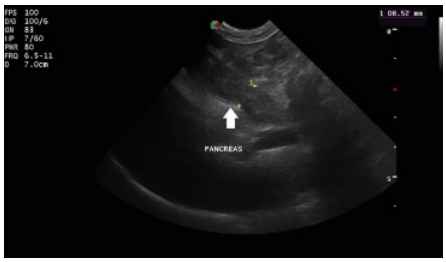

Figure 3- Ultrasound image of the canine pancreas, suggestive of acute pancreatitis. Note hypoechogenicity and thickened parenchyma (indicated by arrow). (Source: DIAGNÓSTICO E TRATAMENTO DA PANCREATITE DA PANCREATITE EM CÃES)

For the animal treatment, symptoms have to be analyzed. We commonly have signs such as dehydration, vomiting, and abdominal pain, and therefore, some protocols are repeated in the treatment of these patients, such as fluid therapy, pain control, specific diet, use of antiemetics, and gastroprotectants[10]. In addition to these medications, we can also use analgesics, antibiotics, anti-inflammatories, and diet management, if the treatment is well indicated by the responsible veterinarian and carried out by the owner, and despite being a quick treatment, the chances of a good recovery are high.

FINAL CONSIDERATIONS

Pancreatitis, due to its nonspecific symptoms, can lead to a late diagnosis. Early recognition of this disease by the veterinarian, together with an understanding of its characteristics, including etiology, diagnosis, prognosis, and treatment, will certainly result in more favorable prognoses and a reduction in mortality rates.

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