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Prevalence of Gallbladder Disordes in Dogs As Assessed by Sonography

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Abstract: In the present study Ninety three dogs with hepatobilary disease were included for this study. Ultrasonographically with liver and gallbladder affections. In dogs, it was found that the most liver and gallbladder affections. The gallbladder Sludge was identified ultrasonographically as echogenic bile or sediment in the dependent part of gallbladder without acoustic shadowing, diagnosed in forty two dogs (39.06%). Mucocele was ultrasonographically characterized by immobile gravity be diagnosed in eleven dogs (3.22%). Cholecystitis was observed in twenty three dogs (25.8%), gallbladder polyp was observed in one dog (1.07%), characterized by echogenic bile or sediment, associated with mass fixes at the gallbladder wall.

Keys words: Dog · Sonography · Gallbladder · Mucocele · Sludge · Polyp and Disordes

INTRODUCTION

The gallbladder is a balloon-like structure which lies between lobes of the liver. Bile is made in the liver and drains through ducts into the gallbladder where it is stored and concentrated. The bile helps the body digest ingested fats. It is released into the small intestine through a tube called the bile duct.Diseases of the gallbladder are divided into three categories: obstructive disease, nonobstructive disease and rupture of the gallbladder or extrahepatic biliary ducts. Obstructive disease may occur when the pancreas is inflamed or scarred and compresses the bile duct. If the inflammation of the pancreas can be reduced, the pressure on the duct is relieved and bile can flow normally again. Cancers may also cause compression of the bile ducts. Choleliths (gallbladder stones) may form in the gallbladder. They can be an incidental (present but not causing any problem) finding on radiographs or at surgery. Gallstones which pass from the gallbladder into the bile duct may block the flow of bile.Nonobstructive disease such as cholecystitis (inflammation of the gallbladder), Gallbladder Mucocele is caused by obstruction of the storage capacity of the gallbladder due to formation of thick, mucoid bile conglomerate inside the gallbladder and consequent impairment of its functioning. The accumulated biliary sludge may extend the gallbladder resulting in necrotizing cholecystitis.rarely in veterinary medicine diagnosis of gallbladder polyp diagnosis [1].

MATERIALS AND METHODS

The study was conducted in the surgery and veterinary imaging, veterinary department, Batna University for a period of two years (2.014-2015). Ninety three dogs with hepatobilary disease were included for this study.

Ultrasonographic examination of the liver and gallbladder of these dogs were performed with Ultrasound machine (Mylab 40 Esaote) using a 3.5-5 MHZ convex transducer. The animal was prepared by overnight fasting whenever required. Anarea from 11th rib to the umbilicus on either side of ventral abdomen was taken after proper shaving, cleaning of the area and placing the animal on dorsal recumbency. Entire hepatic area was examined by placing the scanner head dorsally or laterally to the caudal area of xiphi-sternum. Both the longitudinal and transverse images of the gallbladder were obtained. Each ultrasound image was evaluated for hepatic echogenicity, vascularity, gallbladder contents and diseases (sludge, mucocele, polyp and cholecystitis).

RESULTS

The gallbladder Sludge was identified ultrasonographically as echogenic bile or sediment in the dependent part of gallbladder without acoustic shadowing, diagnosed in forty two dogs (39.06%). In this study, two patterns of sludge were ultrasonographically

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Fig. 1: Ultrasonographic image of canine gallbladder with sludge. There is a clear line of interface between echogenic sludge (left of image) and anechoic bile (right of image)

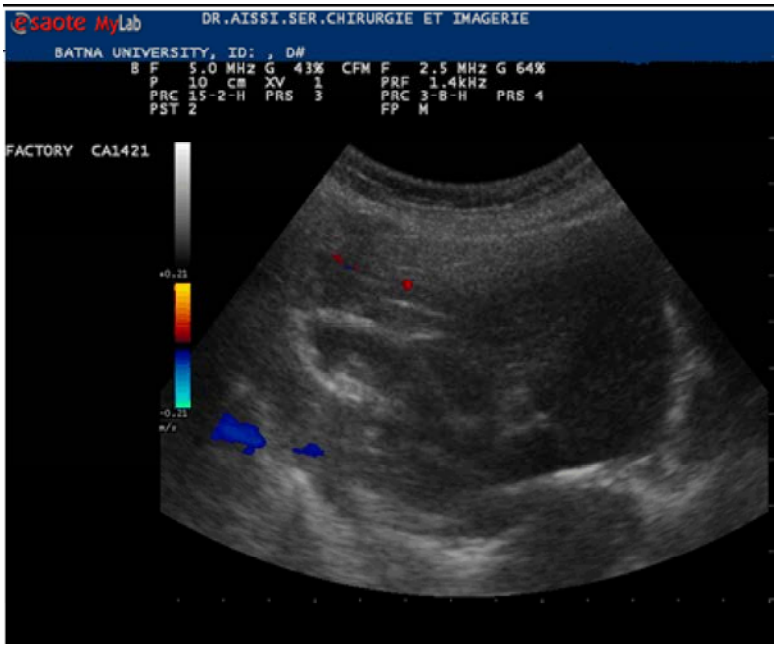

Fig. 2: Ultrasonographic image of canine gallbladder with Mucocele

evident. The first One was characterized by a clear line of interface between the echogenic sludge and anechoic bile (Fig. 1). In second one, defined accumulation of echogenic materials (Fig. 2) was observed in gallbladder. The gallbladder wall was mostly isoechoic.

Mucocele was ultrasonographically characterized by immobile gravity dependent stellate (Fig. 2) or finely striated bile pattern (Fig. 4) and could be diagnosed in eleven dogs (3.22%). All the cases were recorded (Table 1).

Cholecystitis was observed in twenty three dogs (25.8%), ultrasonographically it was characterized by uniformly thickened of gallbladder wall (more than 3.0 mm) gallbladder polyp was observed in one dog (1.07%), characterized by echogenic bile or sediment, associated with mass fixes at the gallbladder wall (Fig. 3).

Fig. 3: Ultrasonographic image of canine gallbladder with polyp

Table 1: Prevalence of gallbladder disorders in dog

Gallbladder diseases	No. of Cases	Percentage
Gallbladder sludge	42(93)	39.06%
Cholecystits	39(93)	36.27%
Mucocele	11(93)	10.23%
Polyp	01(93)	1.07%

DISCUSSION

The function of the gallbladder is to provide a reservoir for the storage and concentration of bile. Secreted by the liver, bile is composed largely of bile salts, bile pigments and small amounts of organic materials such as cholesterol, lecithin, fatty acid and mucin. Bile salts are produced by the liver and are essential for the digestion and absorption of fat in the small intestine. Bile pigments are the end product of the breakdown of hemoglobin during the destruction of old red blood cells. Most of the bile secreted between meals is diverted to the gallbladder.

Inflammation of the gallbladder is sometimes associated with gallstones and is often associated with obstruction and/or inflammation of the common bile duct and/or the liver/bile system [2]. Severe cases can result in rupture of the gallbladder and subsequent severe inflammation of the bile duct (bile peritonitis), necessitating combined surgical and medical treatments. The causes for an inflamed gallbladder (Cholecystitis) or bile duct (Choledochitis) can be from one or more conditions that will lead up to it. Muscles in the gall bladder may be malfunctioning, which can lead to impaired bile flow in the cystic duct or gall bladder, irritating the walls of the gallbladder. Or the blood supply to the gallbladder wall is being restricted, in which case the cause for the restriction must be isolated and treated to improve the blood flow. Irritants in the bile can cause the bile duct to be overly sensitive and reactive.

Cholecystitis was observed in 24 dogs. Ultrasonographically it was characterized by uniformly thickened of wall (more than 3mm).

Gallbladder mucocele diseases were rarely diagnosed in dogs and cats [3, 4]. With the advent of advanced imaging tools such as ultrasound, the diagnosis of gallbladder disease is commonly recognized in dogs and cats. Unlike humans, dogs and cats rarely develop stones in the gallbladder [5]. A mucocele is the most common condition that afflicts the gallbladder. By definition, a mucocele is an accumulation of thick mucus within the gallbladder. Infection is infrequently associated with a mucocele. This condition occurs as a result of excessive proliferation of the mucus-producing cells within the lining of the gallbladder [6, 7]. Thick mucus cannot be expelled from the gallbladder. As the gallbladder becomes distended, its blood supply is impaired and it subsequently is prone to rupturing. Once ruptured, bile will leak into the abdomen from the gallbladder and cause the patient to become severely ill [3, 8]. Gallbladder mucocele is more prevalent in mid-aged to older medium-sized breeds of dogs such as Cocker Spaniels, Miniature

Schnauzers and Shetland Sheepdogs [2, 9]. Mucocele was observed in three dogs. Ultrasonographically it was characterized by immobile gravity dependent stellate or finely striated bile pattern.

Gallbladder polyp present a rarely disease in dog, ultrasonography characterized by echogenic bile associated by masse fixed at wall of gallbladder. In this study one case are observed [3, 10].

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