Research Article

Portosystemic Shunt in Dogs and Cats: A Retrospective Clinical Review

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Abstract

Portosystemic shunt (PSS) is the most common cause of hepatic encephalopathy in dogs and cats. PSS are vascular comminications taking blood directly from portal circulation to the systemic circulation bypassing the liver in process. In this clinical case study; congenital portosystemic shunt causing signs of hepatic encephalopathy were diagnosed in 2 cats and 2 dogs. Medical records between 2009–2011 years of dogs and cats with clinical, hematological, biochemistrical and ultrasonografic confirmed PSS were reviewed. Clinical anemnesis was taken hepatic encephalopathy signs. Hematological and serum biochemistry profile have been identified high level preprandial and postprandial bile acid and Ultrasonografic examination have been diagnosed portosystemic shunt.

The aim of this study is to emphasize the important diagnostic steps that must be taken when diagnosing portal vascular anomalies in cats and dogs.

Keywords: Bile acid, cat, dog, hepatic encephalopathy, portosystemic shunt

Introduction

Portosystemic shunts (PSSs) are among the most common vascular anomalies seen in veterinary medicine and are considered the most frequently diagnosed congenital abmormality of the hepatobiler system (Allyson 2010). Portosystemic shunt is one of the important vascular diseases of the liver, which is mostly encountered with neurological clinical findings seen in cats, and liver diseases such as hepatic cirrhosis and hepatic in dogs due to congenital anomalies as a chronic result, fibrosis tissue formation caused by portal hypertension and liver diseases. Portal venous system and systemic circulation These vascular anomalies, which allow portal venous blood to pass directly to the systemic circulation through the systemic circulation or the liver, have been mentioned in many publications in veterinary medicine. (Lamb 1996; Santos, 2019). Intrahepatic Portosystemic shunts (IHPSS) are congenital vascular communications between the portal venous and systemic venous circulations that occur primarily in large and giant breed dogs (Bostwick 1995). IHPSS develop because of failure of closure of the ductus venosus or as an anomalous vascular communication between the portal venous and systemic circulation within the hepatic parenchyma (Payne JT 1990, Tobias KM 2003). IHPSS have been reported in cats (Blaxter AC 1988). The aim of this study is to emphasize the important diagnostic steps that must be taken when diagnosing portal vascular anomalies in cats and dogs.

Material and Method

In this retrospective clinical review 2 dogs and 2 cats were referred to Dep't of Veterinary Internal Medicine, University of Ankara. Medical records of dogs and cats included between 2009-2011 years. All the animals showed symptoms of hepatic encephalopathy was observed in clinical anamnesis. After the routine total blood counting, bile acids and ammonia measurements were performed with enzymatic colorimetric measurements via spectrophotometer. Cats age range were between 6 months to 3 years in two different genera, including a female in a male the other two dogs in the range of 3 and 7 years old female dogs. Laporoscopic aspiration with of the liver with histopathologic examination of tissue samples were sent to the Department of Pathology. 2 exams as a result of virological FIP positive cats were detected in one of the herpes virus-positive; There was not any infective agent, virological screening of dogs. Application without any operative treatment for 2 years of patients were controlled only with diet applications. Patients for this purpose presciription Hills l/d was given to continue controls.

Results

In this study, the fasting and post prandial bile acids and ammonia measurements observed significant increases and than histopatologcal evaulation Hydropic degeneration and necrosis of hepatocytes up to cords Remark layout changes were lost. Intervals showed a slight increase in rate of portal connective tissue, cell infiltration was seen in some places. Erythrocytes in sinusoids was encountered. Intrahepatic venous shunt is quite prominent in many regions. Especially in the Triassic v.hepatis interlobularis increase in number was found. As a result of the clinical, laboratory, ultrasound and histopathological studies were diagnosed with intrahepatic portosystemic shunt.

Table 1 and 2 also shows the serum biochemical analysis and hematologic analysis.

Table 1. Hemotological Analysis

Parameter	Domestic Short Hair	Mix Breed Cat	Golden Retriver	Chihu-ahua
WBC 10^9/L	8,82	9,35	7,68	4,93
LYM 10^9/L	2,98	3,00	2,68	2,46
MONO 10^9/L	0,21	0,39	0,32	0,19
GRA 10^9/L	5,63	5,96	4,68	2,29
LY %	33,8	32,1	34,9	49,8
MONO %	2,4	4,2	4,2	3,9
GR %	63,8	63,7	60,9	46,3
RBC 1012/L	8,20	5,62	6,76	7,23
HGB g/dL	11,00	8,20	15,1	17,3
HCT %	30,77	24,89	46,68	45,89
MCV fL	38,00	39,00	69	63
MCH pq	13,4	13,5	22,3	23,9
MCHC g/dL	35,7	35,00	32,3	37,7
RDWc %	22,7	22,8	15,4	15,8
PLT 10^9/L	607	330	329	367

Table 2.

Parameter	Domestic Short Hair	Mix Breed Cat	Golden Retriver	Chihua-hua
Glucose	78,2	87,3	66,0	102,2
Ure	65,6	72,4	42,0	25,7
ScR	1,46	1,80	1,20	1,62
Total Pro-tein	8,8	8,1	7,1	7,0
Albumin	2,8	2,8	3,6	3,6
Total Bil.	0,09	0,03	0,35	0,21
Direct Bil.	0,08	0,02	0,22	0,16
Cholesterol	216	227	296	148
Trigliserid	70	43	50	59
ALP	25,6	24	43	120,4
ALT	149,6	52,2	34	40,8
AST	39,8	15,5	25	24
GGT	9,0	6,0	8,0	11,0
LDH	117	63	86	91
Pre. Bile Acid	130,7	6,60	6,00	8,50
Post. Bile Acid	442	20,20	33,60	33,20
Amonia	0,68	0,58	0,78	0,96
Calcium	10,6	10,7	10,2	10,8
Phosphorus	6,2	4,5	3,8	2,2

Discussion

Congenital PSS are most common congenital anomaly of the hepatobiliary system in dogs and cats, hepatic dysfunction results from the presence of a PSS leading to a wide variety of clinical presentation of which hepatic encephalopathy is the most common; definitive diagnosis and identification of concurrent complicating problems requires a combination of labarotory data and diagnostic imaging (Pratschke 2010). Portosystemic shunts usually purebred cats and dogs, many researchers have reported that generally thinks that it is genetic (Hunt 2004). With the development of imaging techniques such as ultrasonography, diagnostic methods and diagnostic methods in many fields strengthen the hand of physicians in diagnosis and non-invasiveness.

It has been an important diagnostic method because it does not require anesthesia. In the last 20 years, the reliability and precision of ultrasonography has increased. It has been reported that it has replaced the old imaging methods with color Doppler and can be used safely in the diagnosis of portosystemic shunt. Ultrasound is very important for the visualization of the hepatic parenchyma for the examination of portal vessels and allows the diagnosis to be strengthened (Lamb, 1996; D'Anjou., 2004). In this clinical observational study we have done, it has been seen that ultrasonography is an important method that we use in diagnosis, like other investigators, and supports other investigators. Predisposition in purebred animals is so more reported in other studies as like as our study. Likewise we think FIP positive cats that Corona virus triggers this anomaly due to vasculitis. The histopathological examination with fine needle aspiration in diagnosis of bile acids and ammonia control and imaging techniques are shaped after the long-term treatment of intrahepatic shunts in terms of the difficulty of operative intervention is very important to consider the feed diet for the liver.

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