

A CASE OF CONGENITAL ARTERIOPORTAL FISTULA IN A DOG

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Abstract

This paper presents the methods of diagnostic and management in a case of a canine arterioportal fistula. The patient was submitted to the physician with signs of portal hypertension, elevated transaminases and hypoproteinemia. The ultrasound exam revealed hepatic lobar asymmetry and irregular contour, ascites and a communication between the hepatic artery and the portal vein. The surgery consisted in the ligation of the arterio-venous communication with non absorbable synthetic material. The post-surgical evolution was favorable.

Key words: arterioportal fistula, Doppler ultrasonography, surgery.

INTRODUCTION

Arterioportal canine fistulas are a rare pathology compared with portosystemic shunts in dogs. The case described and moment of occurrence fits perfectly the symptoms described in the literature.

MATERIALS AND METHODS

The patient, a female, cross breed dog, aged 7 months, intact, was presented with severe abdominal distension (started around 5 month and worsened in the last 2-3 weeks). The clinical exam revealed a reduced muscular mass and increased volume of the abdomen, normal mucous membranes, TRC < 2 sec, normal pulse, heart rate 175 beats/ min, normal mental status. Tests results presented a normal haemoleucogram and biochemical parameters as presented in table 1.

Abdominocentesis was performed and clear ascitic fluid was extracted (pure transudate). The peritoneal fluid cytology identified mesothelial cells, macrophages and rare lymphocytes. Fluid total protein was 0,0 g/dl (refractometry). Diagnose was confirmed after ultrasound exam.

Table 1. Biochemical parameters

Parameter	Value	Reference range
ALT	185 UI/L	0-130 UI/L
AST	99 UI/L	10-50 UI/L
GGT	5,6 UI/L	1-10 UI/L
TBIL	0,17 mg/dl	≤0,3 mg/dl
NH ₃	137 μmol/L	≤98 μmol/L
ALP	350 UI/L	0-200 UI/L
GLU	80 mg/dl	59-157 mg/dl
BUN	14,44 mg/dl	10-33 mg/dl
ALB	3,22 g/dl	3,4-4,2 g/dl

RESULTS AND DISCUSSIONS

Ultrasound examination revealed an increased diameter of portal vein (0.89 cm Ø) compared with aorta (0.53 cm Ø) and an increased ratio between them: PV/ AO= 1.67. (Figure 1)

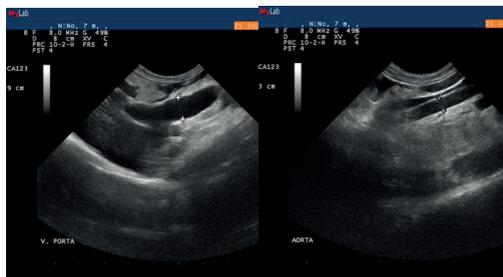


Fig.1 Portal diameter compared with aortal diameter

Numerous acquired portosystemic shunts were observed at the left kidney level and mesenteric vessels. The diameter of the coeliac artery was bigger than the diameter of the cranial mesenteric artery (Figure 2).



Fig.2 Celiac artery diameter bigger than the diameter of the cranial mesenteric artery

The 2D ultrasonography found a tortuous vascular structure in the liver and anastomosis of this structure with the portal vein, at the level of porta hepatis (Figure 3).

The pulsed Doppler examination showed the pulsatile character of the arterial flow (Figure 4) and CFM Doppler the hepatofugal laminar flow without ambiguity phenomenon in the vascular structure described above (Figure 5).

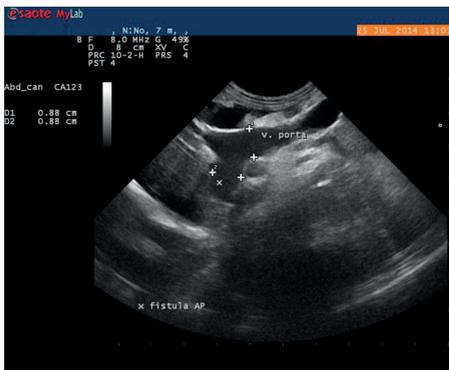


Fig.3 Anastomosis with the portal vein, at the level of porta hepatis

Pulsed Doppler exam of portal vein showed a flux with regular pulsatile nature and clear spectral window, typical for the arterial flow. Flow velocity in portal vein was up to 59,96cm /s with reverse sense (hepatofugal) (Figure 6). Flow velocity in the fistula, close to the portal vein was 30.9 cm/s (Figure 7).

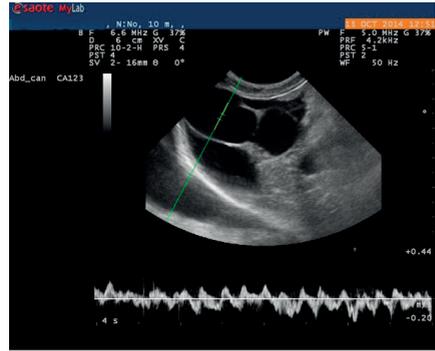


Fig.4 Pulsatile arterial flow of the fistula

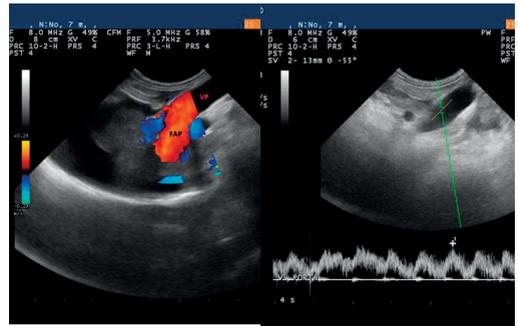


Fig.5 CFM Doppler of the arteriportal fistula (FAP)
Fig.6 Pulsed Doppler exam showed a regular typical aspect for the arterial flow in portal vein.



Fig.7 Flow velocity in the arteriportal fistula (FAP), close to portal communication

Doppler CFM for the kidney and mesenteric shunts highlighted ambiguity phenomenon for the multidirectional flows (Figure 8). Ascites, pancreatic oedema and gallbladder parietal oedema were also found at ultrasound exam. The diagnose confirmed was arteriportal intrahepatic fistula with acquired portosystemic shunts secondary to the portal hypertension syndrome.



Fig.8. Doppler CFM reveals the left kidney acquired shunts, ambiguity phenomenon and the multidirectional flows (kindney is not visible)

The solution chosen for the management of the case presented was surgery: to ligaturate the arteriportal intrahepatic fistula. The protocol for anesthesia and analgesia was elected in accordance with the ASA status of the patient (ASA 3). Anaesthetic agents which are metabolized by the liver or highly protein-bound were avoided because of poor hepatic function and hypoalbuminemia. The patient was premedicated with butorphanol 0.2 mg/kg, induced with propofol and maintained with isoflurane gas. Intraoperative treatment with hetastarch and antibiotics was applied. Analgesia was continued after surgery with Tramadol 2mg/kg t.i.d. Ventro-median retroxiphoidian laparotomy was performed (Figure 9).



Fig.9 Ventro-median retroxiphoidian laparotomy

Ascitic, bloody fluid was evident after the white line puncture.



Fig.10 Ascitic fluid aspiration

After fluid aspiration in the amount of about 500 ml (Figure 10) we proceed to explore the abdominal cavity during which the right side of the liver was found atrophic with modified shape and consistency (Figure 11).

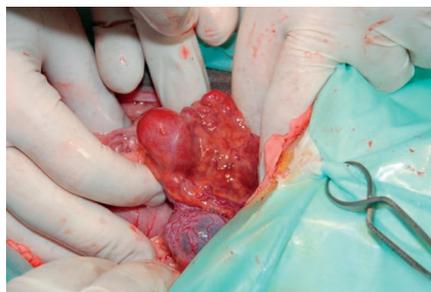


Fig.11 Liver aspect

Arteriportal communication was identified (Figure 12) along with the presence of multiple portosystemic shunts in the left kidney, occurring as a result of portal hypertension (Figure 13).



Fig.12 Arteriportal communication

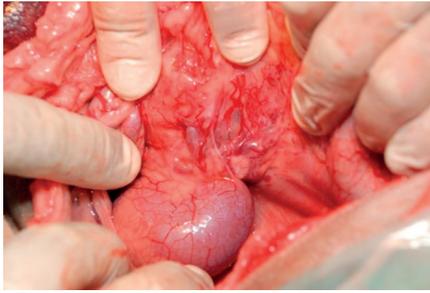


Fig.13. Portosystemic shunts in the left kidney

Pancreatic aspect was modified, discoloured with oedema (Figure 14).

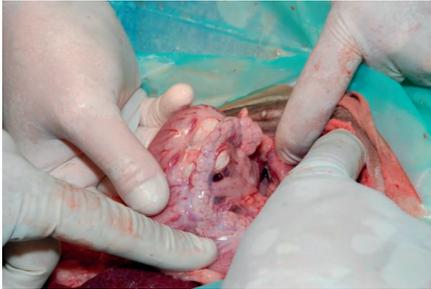


Fig.14 Pancreatic aspect

The surgical intervention consisted in isolation of the arterioportal fistula (Figure 15), applying a double ligature with non absorbable monofilament 2/0 (Figure 16) and cutting between the two ligatures (Figure 17).

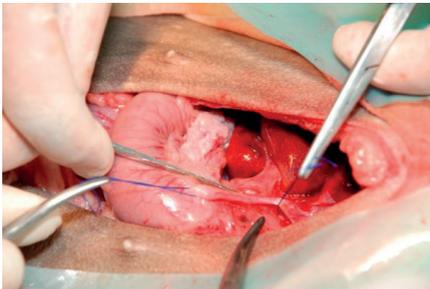


Fig.15 Isolation of the arterioportal fistula

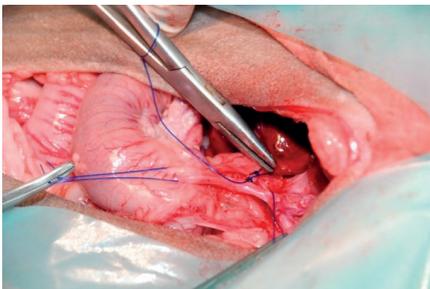


Fig.16 Double ligature of the fistula

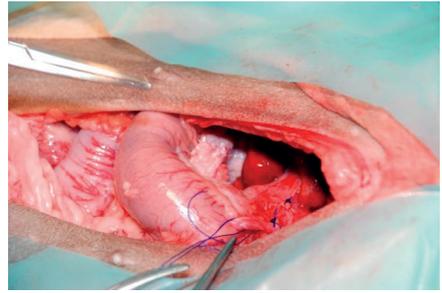


Fig.17 Cutting between the two ligatures, separating the arteriovenous communication

Closure of the abdominal cavity was performed in two planes: simple continuous suture of the muscular and peritoneal wall with PDS 2/0 followed by the cutaneous plan continuous suture in “U”, with 3/0 nylon.

CONCLUSIONS

The aspect of the ascitic fluid and the presence of multiple portosystemic shunts in the left kidney, attested the portal hypertension installed consecutively to the venous-arterial blood mixture. Doppler ultrasound examination facilitated the differential diagnosis of arterioportal fistula from other hepatic vascular abnormalities, emphasizing the turbulent and pulsating character of the flow. The surgical ligation of the arteriovenous communication was effective in relieving the symptoms, although a certain degree of portal hypertension persisted postoperative, as evidenced by the persistence of portosystemic shunts from the left kidney.

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