ESAVS
European School for
Advanced Veterinary Studies

UNIVERSITY OF LUXEMBOURG

Case Report Instructions
EMSAVM Surgery

General instructions

- Case reports, written in prose, must be in a problem-oriented approach and include a complete presentation of the case, illustrations where necessary, literature review on the subject with references and a discussion. Candidates must demonstrate a comprehensive understanding of the topic.
- A case report should contain 2000 words +/- 10%, excluding tables, references and appendix.
- The 10 cases must be a mixture of various species, problems and diagnosis, all pertaining to the selected master's program. Candidates are required to keep a table of the already submitted cases which shall be send with each new case report submission. The ESAVS Office will provide an Excel template for the table below:

Case Nr.	Species	Problem/s	Diagnosis

- Candidates are advised to submit cases shortly after beginning and throughout the program and not all cases at the end of the program.
- ESAVS cannot guarantee the evaluation of more than 3 case reports per semester. To ensure an evaluation in a specific semester, reports should be submitted no later than 8 weeks prior to semester end (please see "Important dates" on the ESAVS website).

Cases should be set out under the following headings:

- Title
- Signalement
- Case History
- Physical Examination
- Differential diagnosis and final diagnosis
- Medical and surgical treatments
- Post-operative care
- Results and control
- Discussion
- References
- Pictures, including explanation (if necessary)

Each case report is viewed by one member of the Examination Board and graded on a 0-20 scale (<10= fail, 10-11,9 = sufficient, 12-13,9 = fair, 14-15,9 = good, 16-17,9 = very good, 18-20 = excellent).

The grades of the individual case reports are averaged to obtain one single grade. When this average grade is below 10, candidates are requested to resubmit revised or new cases for the failed case reports.

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Evaluation of a case report

Step 1: Is the case report acceptable?

Is the case described in the report suitable at all?

Reasons to reject a case are:

- A case is too simple (e.g. an uncomplicated humerus fracture)
- Lack of an adequate number of state of the art clinical tests to arrive at a diagnosis (or at least a presumptive diagnosis). The case could be resubmitted when the lacking information can be retrieved.
- Inadequate surgical technique
- The animal's life was endangered by excessive/unnecessary diagnostic tests or treatments (including surgery). Such a case cannot be resubmitted.
- A case that falls not within the specified master program
- Most diagnostic tests and interpretation are done by a referring veterinarian
- Inadequate follow-up of a case (e.g. diagnosis reached after euthanasia with no follow-up available)
- Multiple cases all with the same problems or diagnosis
- Cases not seen during the enrollment in the program of the master student or where the master student is not the primary responsible clinician

If a case is rejected the case report is assigned 0 points. The reason will be stated in the evaluation.

Step 2: Grading of the accepted case report

The case report will be evaluated based on a check sheet

An accepted case starts with the maximum of 20 points. 10 points are minimally required as a passing grade.

The table below contains a list of 11 potential inadequacies. For each one the examiner can deduct a number of points. The examiner is not limited to the potential maximum number of points to be deducted, this is just used as a guideline (i.e. it is possible to deduct more in a single category if applicable). At the end a total of points remains.

Recommendations for the candidate to avoid deduction of points:

- Make sure the history is sufficient
- Give all details of the physical exam (report on how you evaluated the lameness, etc.)
- Reported tests need to be relevant for the animal: XRays, Ultra-sound, CT.
- Explain how you came to the diagnosis
- Be precise in the description of the surgical treatment
- Discuss the case – do not just repeat text book knowledge! Bring relevant literature to justify your treatment
- Be sure your treatment was appropriate and discuss the alternative options
- Be precise about results and complications

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Evaluation Check Sheet of a Case Report / Surgery

Inadequacies	**Potential max. deduction**	**Points deducted**
Incomplete signalment, history and physical examination	1	
Inadequate list of differentials	2	
Inadequate choice of tests and assessment	2	
Poor quality representation of diagnostic tests (radiographs, endoscopy)	2	
Incorrect or unjustified diagnosis	2	
Inadequate or inappropriate medical management	2	
Inadequate surgical treatment	4	
Inadequate follow-up for the case report to be meaningful	1	
Inappropriate discussion, not adequately referenced	2	
Language and word count inadequate	1	
Other problems not covered above	1	
TOTAL POINTS	20	
GRADE (= 20 – total deducted points)		

There is no “perfect” case and thus the subsequent example of a case should be viewed more as how to present your case. If you have questions, please ask them during one of the courses early on – the course masters are ready and willing to help.

COMPANION OR PET ANIMALS

Haemorrhage after liver biopsy in a dog with portosystemic shunt

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SUMMARY

A 5-year-old intact female Chihuahua was transferred to our hospital for attenuation of a portosystemic shunt. The attenuation was done by means of cellophane banding and a routine liver biopsy was taken. Postoperatively, the dog developed haemoabdomen and the haematocrit dropped to 11 per cent. Relaparotomy revealed an acute haemorrhage from the biopsy site and partial liver lobectomy was performed to control bleeding. Despite all attempts at treatment, the dog developed serious metabolic and respiratory derangements and eventually died after an episode of respiratory arrest. With this report, the authors want to raise awareness of this potentially fatal complication and motivate the readers to weigh the benefit of additional information against the risk a 'simple' liver biopsy could entail in animals undergoing portosystemic shunt attenuation.

BACKGROUND

Liver biopsy samples are routinely obtained during surgical treatment of portosystemic shunt (PSS) (Baade and others 2006, Parker and others 2008, Lee and others 2011). Their collection is usually considered safe and may provide important information (eg, it has been reported that dogs without intra-hepatic portal veins and increased ductular reaction are less likely to tolerate total attenuation of the shunt vessel (Lee and others 2011)). Animals with PSS have changes in haemostatic profiles and may thus be prone to haemorrhages (Niles and others 2001, Kummeling and others 2010). To the authors' knowledge, there are no previous reports of a fatal outcome due to haemorrhage after liver biopsy.

CASE PRESENTATION

A 5-year-old 4.3 kg intact female Chihuahua was referred to our hospital due to treatment-resistant seizures. The physical examination was unremarkable, although the dog had a seizure immediately after the examination. Blood biochemistry revealed elevated transaminases (aspartate transaminase 110 U/l, normal range <100 U/l; alanine transaminase 639 U/l, normal range <80 U/l), an elevated concentration of preprandial bile acids (95 μmol/l, normal range <20 μmol/l) and a subnormal blood urea nitrogen concentration of 15.3 mg/dl (normal range 20–40 mg/dl). Abdominal ultrasonography revealed a micro-hepatia and single extra-hepatic porto-caval shunt. At the owner's request, treatment was initiated, consisting of gabapentin (Neurontin, Pfizer) 12 mg/kg, three times a day; neomycin (Genericum) 20 mg/kg, twice a day; lactulose (Laevolac, Fresenius Kabi) 0.5 ml/kg, twice a day; ranitidine (Ranitidin, Stada) 2 mg/kg, twice a day; and a low protein diet. As the dog's clinical condition did not improve to the extent expected, the owner opted for surgical attenuation of the shunt. CT angiography was performed and 3D reconstruction allowed accurate identification of the shunt vessel. A preoperative coagulation profile consisting of activated partial thromboplastin time (aPTT), prothrombin time (PT) and thrombin time was taken. Except for a minimally prolonged prothrombine time (10.7 seconds, normal range 8–10 seconds), all the variables were within the normal physiological range. The thrombocytes count was 308 10^3/μl, normal range 150–500 10^3/μl. The dog was premedicated intravenously with methadone (Heptadon, Ebewe Pharma) 2 mg/kg and anaesthesia was induced with propofol (Propofol, Fresenius Kabi) 5 mg/kg. Anaesthesia was maintained with isoflurane (1–2 per cent) in oxygen and infusion of remifentanil hydrochloride (Remifentanil, Ultiva) 20 μg/kg/hour at a continuous rate. Midline coeliotomy was performed. The abdominal organs were unremarkable except for a noticeably small liver. The extra-hepatic porto-caval shunt was located: it branched from the portal vein at the level of the epiploic foramen, passing to the left and entering the caudal vena cava just cranial to the left renal vein. A 6 mm wide cellophane band was loosely placed around it and the free ends of the cellophane band were attached to each other using three titanium clips. A routine 6 mm diameter punch liver biopsy (Stiefel, Gsk Company) was taken from the right medial liver lobe. A haemostatic gelatine sponge (Spongostan special Johnson+Johnson Medical GmbH) of the same size as the punch biopsy was inserted into the hole. No residual bleeding was observed. During anaesthesia, the dog showed four episodes of hypotension (mean blood pressure <60 mm Hg) and bradycardia, which were corrected by intravenous administration of glycopyrrolate (Robinul, Baxter Health Corporation) 10 μg/kg and a bolus of hydroxyethyl starch 2 ml/kg (Voluven 6 per cent, Fresenius Kabi). Mild hypertension was seen during the manipulation of the shunt vessel but no portal hypertension was observed after cellophane banding of the shunt. The abdomen was closed routinely and the animal was transferred to the intensive care unit for postoperative monitoring.

Three hours postoperatively, the dog presented an over-dilated abdomen, pale mucous membranes, weak femoral pulse, tachycardia, hypothermia and abdominocentesis consistent with an acute

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haemoabdomen. The peripheral haematocrit dropped from 31 per cent to 11 per cent. Full blood transfusion was immediately administered and the dog underwent emergency coeliotomy. Acute arterial bleeding from the liver biopsy site was located and partial liver lobectomy using a 5 mm vessel-sealer-divider device (Ligasure, Covidien) was performed to control bleeding. The blood that had been collected during the operation was partially auto-transfused. The abdomen was again closed with routine suturing and the dog was returned to the intensive care unit. During the following hours, the dog developed several serious complications due to major blood loss and consequent hypovolemic shock. It suffered from haemorrhagic diarrhoea, hypoglycaemia (46 mg/dl, normal range 55–90 mg/dl), mild hypoalbuminaemia (2.17 g/dl, normal range 2.58–4.73 g/dl), ventricular tahycardia and respiratory distress. Lung radiographs revealed an alveolar pattern suggestive of pulmonary oedema. Cardiological examination consisted of ECG and ultrasonography of the heart was performed and the level of troponin I was measured (elevated above the reference range of 180). Based on these findings, a tentative diagnosis of an ischaemic myocarditis was made. Severe thrombocytopenia (thrombocyte counts 57 10^3/µl, normal range 150–500 10^3/µl), mild prolongation of clothing times (aPTT 17.9 seconds, normal range 8–15 seconds; and PT 12 seconds, normal range 8–10 seconds), gastrointestinal bleeding and increasing hyperlactaemia (from 2.7 to 5.0 mmol/l, normal range <2 mmol/l) led to another tentative diagnosis of disseminated intravascular coagulation, which was initially but not exclusively treated with fresh frozen plasma. Despite all attempts at treatment, the dog developed serious metabolic and respiratory acidosis as well as hypotension that was unresponsive to a high dose of dopamine and dobutamine continuous rate infusion. Forty-eight hours postoperation, the dog suffered an episode of respiratory arrest and resuscitation was unsuccessful.

INVESTIGATIONS

Histological examination of the liver biopsy did not show any intra-hepatic shunting at the capillary level. Compared with the livers of unaffected dogs, there were slightly more arterioles with activated endothelial cells in the portal triads. The hepatocytes were of a normal gross appearance, with moderate vacuolar degeneration.

DISCUSSION

Animals with liver disease often have prolonged coagulation times and portal hypertension and are at a higher risk of haemorrhage (Mayhew and Weisse 2012). Dogs with PSS tend to have prolonged PTs and significantly higher partial thromboplastin times, although there is no suggestion that this should lead to an increased risk of intra-operative bleeding (Niles and others 2001). In our animal, the preoperative coagulation profile indicated a minimally extended PT; however, clothing times should not be solely relied on for the interpretation of the individual clothing factors and additional assays should be used for their determination, as their pool may be reduced in animals with PSS due to decreased synthesis in the affected liver (Niles and others 2001).

The usefulness of liver biopsies for the prediction of outcomes in dogs undergoing surgical attenuation of a PSS is questionable (Parker and others 2008). Histological changes in the liver specimen of this animal were similar to those described elsewhere (Lee and others 2011). The most prominent histological finding was an increased number of arterioles within the portal triads.

A previous study compared five different liver biopsy techniques (Vasanjee and others 2006). All the techniques caused minimal haemorrhage, with less than 2 ml of blood lost, although the punch biopsies caused significantly higher blood loss than the other techniques. A modification of the punch biopsy has been described in which a cylinder of a gelatine sponge replaces the liver tissue to control postoperative haemorrhage (Mayhew and Weisse 2012). We used this modification but the animal nevertheless suffered fatal bleeding.

Portal hypertension that could increase the risk of postoperative bleeding after punch biopsy is an uncommon complication in animals undergoing cellophane banding (Hunt and others 2004, Frankel and others 2006) and was not evident in this case. However, bleeding from the biopsy site could have remained undetected due to severe intra-operative hypotension. An experimental study on pigs suggests that re-bleeding at the site of aortotomy could be expected at a mean arterial pressure of 64 mm Hg (Sondeen and others 2003). We speculate that the combination of the increased number of arterioles within the portal triads, postoperative normalisation of blood pressure and unfortunate choice of the punch biopsy technique could have led to severe haemorrhage and a fatal outcome.

Learning points

- Animals suffering from portosystemic shunting have an increased percentage of hepatic arterial vessels and potential portal hypertension, especially in the event of complete shunt attenuation (or vessel kinking when an ameroid ring constrictor is used), as well as a generally increased tendency to bleeding.
- Special care and meticulous haemostasis are warranted when liver biopsies are taken. It is prudent to perform liver biopsies in animals without clinically relevant clothing derangements while using the techniques that provide immediate haemostasis such as ligature method or vessel-sealer-divider devices without relying on clothing capacities that may be reduced in animals with portosystemic shunt (PSS).
- Postoperative monitoring of animals undergoing PSS attenuation should as well be aimed at early detection of haemorrhage. Simple clinical tests (colour of mucous membranes, pulse rate and its quality, inner body temperature measurement and packed cell volume) that are done at regular intervals (eg, hourly) might be sufficient for early detection.
- The benefit of the additional information must be weighed against the risk a 'simple' liver biopsy could entail.

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