

1 **Hepatocholecystitis due to *Salmonella Dublin* in a crossbred calf**

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11 *Salmonella Dublin* affects both young and adult cattle and is spread by oro-fecal
12 contamination due to active shedding dam at parturition or by environment. If the calf survives to
13 the acute stage of a gastroenteritis caused by *Salmonella*, a postsystemic or ascending localization
14 in mesenteric lymph nodes, liver, spleen, and gallbladder can occur. But, by now, there is no
15 literature regarding acute cholecystitis as complication in carriers. We herein report a case of acute
16 hepatocholecystitis due to *S. Dublin*.

17 A two-month-old, female crossbred Belgian Blue calf was presented at the Clinic for
18 Ruminants for anorexia for two days. The initial clinical examination revealed weariness, 8 % of
19 dehydration and a severe mucosal jaundice (yellow to orange). Faeces with an orange colour and
20 abundant mucus were noticed. The abdomen was supple with a “drop-sound” on the left side and a
21 light reduction of bowel sounds on the right. A mild fluid splashing sound was audible on
22 succussion of both sides, but the paracentesis was negative. The urine was dark-orange and the test
23 strips were highly positive for blood and lightly positive for bilirubin. The haematology revealed a
24 marked neutrophilia and monocytosis. Blood biochemistry revealed a slight hyponatremia, an
25 important bilirubinemia (total and conjugated), with an increase of bile salts and gamma-GT. The
26 transabdominal ultrasonography revealed a hyperechoic liver with a hypoechoic distended
27 gallbladder and anechoic liquid between the two structures. Symptoms and results of analysis drew
28 us to a suspicion of cholestasis with a severe inflammation. After the hydration status was restored,
29 and after administration of antibiotics, NSAIDs and hepatoprotectors, a ventral midline exploratory
30 laparotomy was performed, confirming our clinical suspicion. The calf died after 24 hours. The
31 necropsy revealed generalized jaundice, and a distended gallbladder without obstruction.
32 Unexpectedly, abomasal content was observed in the rumen. The histopathology identified a
33 moderate necrotizing cholecystitis, a severe acute multifocal necrotizing hepatitis with a diffuse
34 lymphoplasmacytic cholangitis, acute necrotizing lymphadenitis of hepatic lymph nodes and a mild

35 lymphocytic interstitial nephritis, suggesting a Salmonellosis. At the bacteriological examination of
36 the bile, a pure culture of *Salmonella enteritidis serovar Dublin* was isolated. *A posteriori*, breeder
37 noticed that abortion due to salmonellosis occurred and that water contamination was suspected as
38 well.

39 Acute acalculous cholecystitis (AAC) has been described in humans as a gallbladder disease
40 accounting approximately for 10% of all cases of acute cholecystitis. The aetiology is still
41 uncertain, may be multifactorial, and includes secondary infection of the gallbladder (through blood
42 drainage or directly from the bowel along the common bile duct) following a systemic infection due
43 to bacteria, virus, parasites or fungi. The high clinical suspicion of ACC is based on nonspecific
44 findings such as epigastric and right hypochondria pain, anorexia, nausea, vomiting, fever,
45 leucocytosis, and abnormal liver enzymes. The definitive diagnosis is usually based on imaging
46 procedures. Exploratory laparotomy may be avoided in all critically ill patients. ACC is associated
47 with a high mortality rate (30 – 80 %)