

Ascites in Cattle

Ultrasonographic Findings and Diagnosis



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KEYWORDS

- Cattle • Ultrasonography • Noninflammatory ascites • Inflammatory ascites
- Peritonitis • Uroperitoneum • Hemoperitoneum • Biliary ascites

KEY POINTS

- Ascites is excessive accumulation of fluid in the peritoneal cavity; based on clinical examination alone, this condition can be difficult to diagnose because signs of abdominal fluid accumulation may be subtle and detected only after careful examination.
- The identification of the cause of ascites can be demanding and undoubtedly is facilitated by an in-depth knowledge of physiology and internal medicine.
- Abdominocentesis and examination of the aspirated fluid are mandatory steps in the examination of an animal with ascites.
- Ultrasonography allows the assessment of the extent and nature of the fluid accumulation and also identifies other pathologic changes, including dilation of the cranial vena cava, severe liver lesions, bladder rupture, or fibrinous deposits on abdominal organs, that might point to the cause of the ascites.

INTRODUCTION

Ascites is excessive accumulation of fluid in the peritoneal cavity. Based on clinical examination alone, this condition can be difficult to diagnose because signs of abdominal fluid accumulation may be subtle and detected only after careful examination. Furthermore, the identification of the cause of ascites can be demanding and undoubtedly is facilitated by an in-depth knowledge of physiology and internal medicine. Abdominocentesis and examination of the aspirated fluid are mandatory steps in the examination of an animal with ascites. Ultrasonography allows the assessment of the extent and nature of the fluid accumulation and also identifies other pathologic changes, including dilation of the cranial vena cava, severe liver lesions, bladder rupture, or fibrinous deposits on abdominal organs, that might point to the cause of the ascites. Ultrasonography includes evaluation of the fluid as well as the various

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organ systems; therefore, special knowledge of the ultrasonographic features of these organs is an invaluable asset.

DIAGNOSTIC PROCEDURE IN SUSPECTED CASES OF ASCITES

The diagnostic procedure for ascites includes clinical examination, urinalysis, hematological and biochemical analysis of the blood, abdominal ultrasonography, and abdominocentesis. This article focuses on the ultrasonographic examination of the abdomen.

Clinical Examination

Clinical examination does not reveal ascites unless the abdominal fluid accumulation is pronounced, at which time pear-shaped enlargement of the abdomen, a strikingly flaccid abdominal wall, and sloshing of fluid on abdominal succussion are evident. The differential diagnosis includes conditions accompanied by fluid accumulation in the gastrointestinal tract or in the pregnant uterus. Whether the fluid is intraruminal, in the intestines, uterus, or the peritoneal cavity is determined during transrectal examination. Ascites accompanied by a tense abdomen, an arched back, and positive foreign body tests is suggestive of peritonitis with intraperitoneal exudate.

Blood Examination

This examination comprises hematological and biochemical analyses, including the measurement of the packed cell volume and white blood cell count and the concentration of serum total solids, fibrinogen, electrolytes, urea, creatinine and bilirubin and the activities of liver enzymes. The serum albumin concentration should always be determined in cattle with noninflammatory ascites.

Ultrasonographic Examination

Ultrasonography is a very sensitive, rapid, and accurate technique for the detection of peritoneal fluid.¹ Even very small amounts of fluid are readily visualized; the localization, extent, and nature of the peritoneal fluid can be assessed. In addition, it is often possible to identify the cause of the ascites.

Abdominocentesis

Abdominocentesis and examination of the aspirated fluid are required for the characterization of the ascites fluid, to differentiate noninflammatory and inflammatory ascites, and to distinguish between uroperitoneum, hemoperitoneum, chylous ascites, and bile peritonitis.

TECHNIQUES OF ABDOMINAL ULTRASONOGRAPHY AND ABDOMINOCENTESIS

Ultrasonography Technique in Suspected Cases of Ascites

Ultrasonographic examination is carried out on both sides of the abdomen and transrectally in the standing nonsedated animal.² The hair is clipped on both sides and the skin cleaned with alcohol before applying conductive gel. Linear or convex transducers with a frequency of 3.5 to 5.0 MHz are ideal, but abnormalities close to the abdominal wall can also be assessed with a 7.5-MHz transducer. The abdomen is examined on both sides from caudal to cranial. The transducer is placed at the paralumbar fossa and then moved ventrally to the midline. The intercostal spaces 12 to 7 are also examined with the transducer held parallel to the ribs. The urinary bladder and uterus are examined transrectally with the transducer directed ventrally, and the caudal part of the left kidney is examined with the transducer directed dorsally.

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