Liver Lobe Torsion in Pet Rabbits

Clinical Consequences, Diagnosis, and Treatment

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KEYWORDS

• Gastrointestinal disease • Rabbit • Stasis • Liver torsion

KEY POINTS

- Liver lobe torsion is a relatively uncommon presentation in pet rabbits.
- Rabbits with liver lobe torsion generally present with nonspecific signs of gastrointestinal stasis.
- Delay in diagnosis and surgical correction of liver lobe torsion in rabbits may be associated with death.
- Ultrasound examination is generally diagnostic for liver lobe torsion in rabbits.
- Rabbits may survive liver lobe torsion with medical management only.
- One of the authors has documented 16 cases of liver torsion in rabbits at a single referral institution in 5 years.

INTRODUCTION

Liver lobe torsion is rarely reported in any species, but reports exist in people, horses, dogs, pigs, otters, rats, mice, and rabbits.[1–26] In veterinary medicine, liver lobe torsion is most commonly described in dogs.[4,13,14,16,19] Acute venous infarction and lobar hepatic necrosis occur and can result in effusion, hemoabdomen, shock, and death. Disseminated intravascular coagulation has been reported as a result of bacterial toxin and ischemic by-product release.

Although the cause of liver lobe torsion is unknown, predisposing factors are thought to include surgical or external trauma, congenital absence of hepatic ligaments, or dilation of abdominal organs.[10,16,19,26] It is also possible that liver lobe

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pathology including parasitic and bacterial infection or neoplasia could contribute to an increased incidence of torsion.[4,16,27] The left lateral lobe is reportedly most prone to torsion in species other than rabbits and thought to be related to its relatively larger size, increased mobility, and separation from other lobes.[8,15] In rabbits, the caudate liver lobe is reportedly prone to displacement, theoretically because of its narrow attachment to the dorsal hilar region of the liver.[27] A recent retrospective review of 16 cases of liver lobe torsion in rabbits showed that the caudate lobe was torsed in 63% of cases.[1] In addition, a literature review of 29 cases (including the 16 from the retrospective review) described 18 of 29 rabbits (62%) with torsion of the caudate lobe.

The most common signs in dogs with liver lobe torsion are nonspecific signs including lethargy, anorexia, vomiting, collapse, or sudden death. Increases in hepatic enzyme activities are typical in cases of liver lobe torsion in dogs.[8] Although radiographs are generally not diagnostic for live lobe torsion in most species, ultrasound with Doppler assessment of hepatic vessels may be useful to diagnose liver lobe torsion in dogs, although reports differ on this point.[8,28] Prompt diagnosis and liver lobectomy are vital for cases of liver lobe torsion.

CLINICAL CONSEQUENCES

Liver lobe torsion has been reported as an incidental finding in rabbits. Three cases of liver lobe torsion were reported during necropsy of 984 laboratory rabbits that died of pasteurellosis with no reported abdominal signs.[23] Two of the rabbits in the report had atrophied lobes, while the third rabbit appeared to have a recent torsion. This report suggested that liver lobe torsion is likely to occur infrequently in rabbits and that rabbits may survive after torsion of a lobe. A recent retrospective of 16 cases of liver lobe torsion in rabbits revealed that 3 of 7 (43%) rabbits survived torsion with supportive care measures alone.[1] The authors documented a rabbit over a several year period with an incidental finding of an atrophied liver lobe on ultrasound possibly secondary to a previous torsion.

Liver lobe torsion has also been suspected as a cause of death in rabbits. A report of a rabbit found dead in its cage identified liver lobe torsion as the presumptive cause of death.[25] Four out of 7 rabbits (57%) treated with supportive care measures only died as a result of complications due to liver lobe torsion in the retrospective study by Graham and colleagues.[1] Based on this information, as well as outcomes reported in other species, it was concluded that untreated cases of liver lobe torsion may result in death of the rabbit.

SIGNALMENT

Based on the retrospective study by Graham and colleagues,[1] the median age of presentation for rabbits with liver torsion was 5.15 years. There was no sex predilection. The median body weight was 2.57 kg. Eleven of the rabbits were Mini Lops, and other breeds included: 1 Dutch, 1 Holland Lop, 1 American Fuzzy Lop, and 2 mixed breeds. Most Lops in the report were noted to be white with brown spots (**Fig. 1**). Although an attempt was made to identify sources of rabbits, most had been rescued, so it was impossible to try and determine a common breeder. Determination of lineage could be helpful to prove a genetic predisposition. As an aside, cases of hepatic torsion reports in rabbits on file with 2 specialty pathology services were evaluated to determine if there appeared to be a breed predisposition, and there was not.

Many of the rabbits with liver torsion in the retrospective study by Graham and colleagues had a history of prior gastrointestinal (GI) stasis, and one of these rabbits had