What Is Your Diagnosis?

In cooperation with

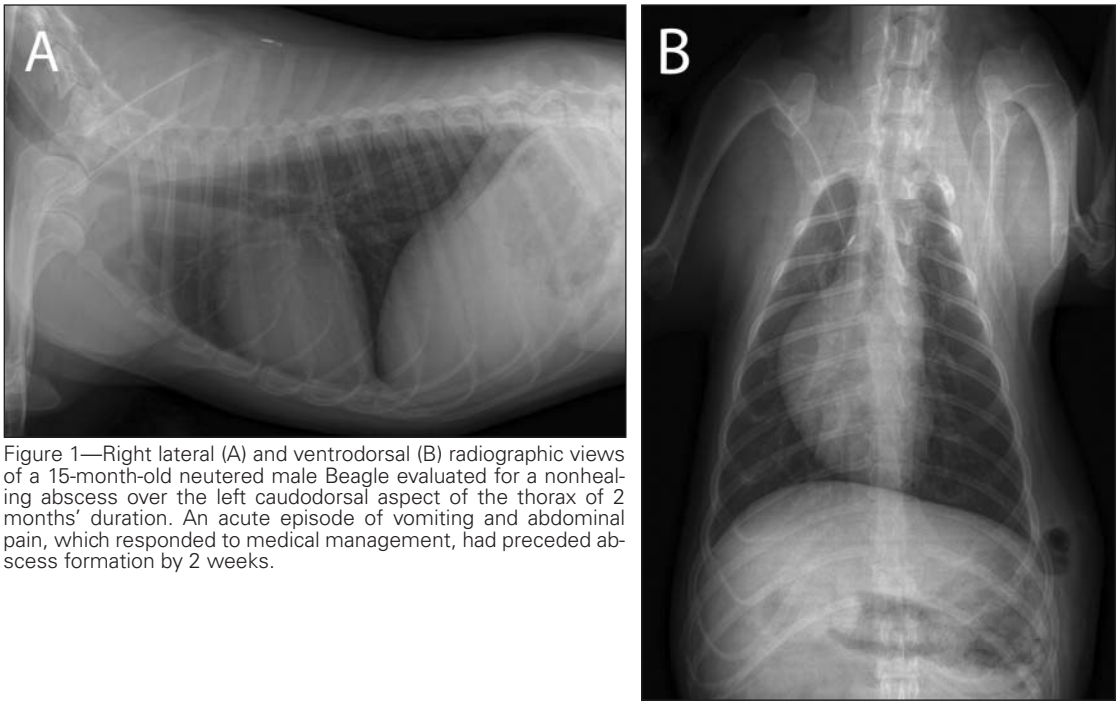

Figure 1—Right lateral (A) and ventrodorsal (B) radiographic views of a 15-month-old neutered male Beagle evaluated for a nonhealing abscess over the left caudodorsal aspect of the thorax of 2 months' duration. An acute episode of vomiting and abdominal pain, which responded to medical management, had preceded abscess formation by 2 weeks.

History

A 15-month-old neutered male Beagle was evaluated because of a nonhealing abscess over the left caudodorsal aspect of the thorax of 2 months' duration. Approximately 2 weeks prior to abscess development, the patient had a bout of vomiting and abdominal pain that resolved with medical management. Radiographs were not taken at that time. Surgical exploration, bacterial cultures, drain placement, and antimicrobial treatment administered by the referring veterinarian did not lead to resolution of the abscess.

On physical examination, a draining wound was observed on the left caudodorsal aspect of the thorax. Associated swelling was present from the spinous processes to the mid-caudolateral aspect of the thorax. A hard, painful swelling was also observed caudal to the last rib on the left side. A CBC and serum biochemical analysis were performed and revealed the following abnormalities: leukocytosis (17.7×10^3 WBCs/µL; reference range, 4.0×10^3 WBCs/µL to 15.5×10^3 WBCs/µL) with mature neutrophilia (11,328 cells/µL; reference range, 2,060 to 10,600 cells/µL), monocytosis (1,593 cells/µL; reference range, 0 to 840 cells/µL), hypoalbuminemia (2.4 g/dL; reference range, 2.7 to 4.4 g/dL), and hyperglobulinemia (4.2 g/dL; reference range, 1.6 to 3.6 g/dL). Differential diagnoses for an extrathoracic mass, given the history and clinical signs, included abscess, penetrating foreign body with associated swelling, and neoplasia. Thoracic radiography was performed (**Figure 1**).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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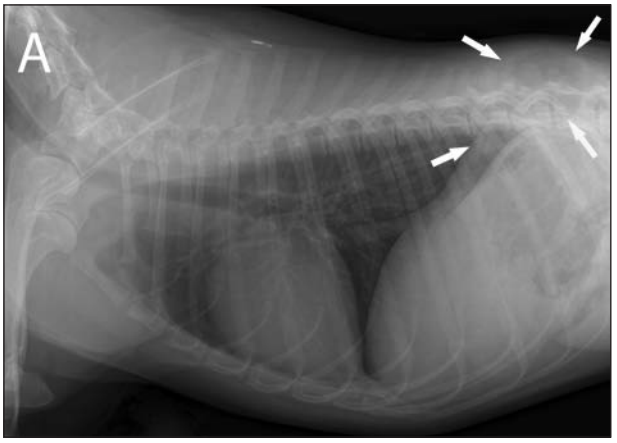

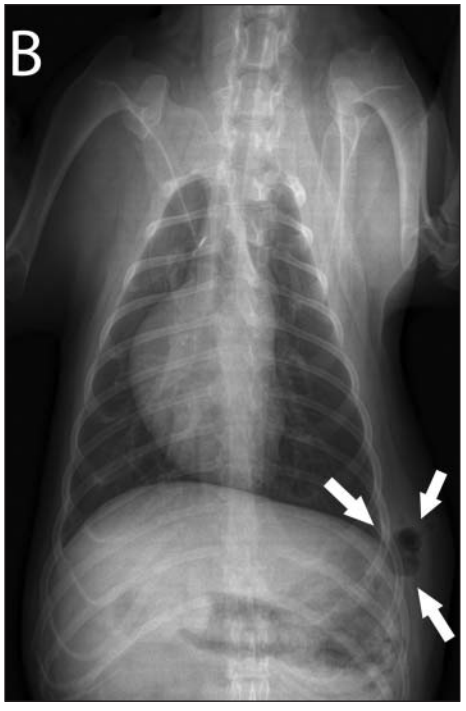

Figure 2—Same radiographic views as in Figure 1. Notice the cavitated extrathoracic mass containing a mixed gas and fluid opacity (arrows) near the 10th intercostal space on the caudodorsal aspect of the thoracic wall on the left side.

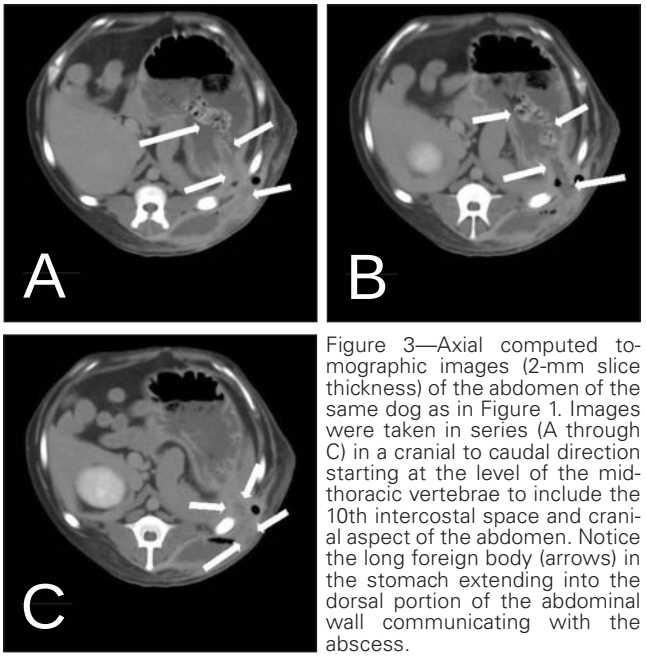

Figure 3—Axial computed tomographic images (2-mm slice thickness) of the abdomen of the same dog as in Figure 1. Images were taken in series (A through C) in a cranial to caudal direction starting at the level of the mid-thoracic vertebrae to include the 10th intercostal space and cranial aspect of the abdomen. Notice the long foreign body (arrows) in the stomach extending into the dorsal portion of the abdominal wall communicating with the abscess.

Diagnostic Imaging Findings and Interpretation

An extrathoracic mass with mixed soft tissue and gas opacity is evident dorsally and laterally over the 10th left rib (**Figure 2**). Soft tissue swelling is apparent near the mass. The remainder of the intrathoracic structures appear radiographically normal; the stomach contains gas and ingesta.

Computed tomography of the thorax and abdomen (**Figure 3**) was performed and revealed an elongated radiopaque foreign body in the stomach that extended through the dorsal aspect of the gastric wall on the left side where it was lodged in the abdominal wall. Communication between the foreign body and the thoracic cavity was ruled out on the basis of findings on the computed tomographic images.

Comments

Gastrotomy with surgical exploration of the abscess revealed a wooden stick in the stomach that had penetrated the gastric fundus and effectively dragged a portion of the stomach through the dorsal aspect of the body wall. Adhesion formation between the stomach and body wall musculature had created a gastrocutaneous fistula resulting in formation of a cutaneous abscess. Bacterial culture of the fistula yielded an *Enterococcus* sp and β-hemolytic *Streptococcus* sp. Fistula excision and closure, drain placement, and antimicrobial treatment were instituted, and the patient was discharged from the hospital 2 days later.

Imaging described for the diagnosis of penetrating foreign bodies includes radiography, sinography, fistulography, ultrasonography, magnetic resonance imaging, and computed tomography. Radiographically, the presence of gas opacity in the subcutaneous tissues or between fascial planes is the most frequent abnormality observed, followed by soft tissue swelling. However, as was true for the dog of this report, wooden sticks may become saturated with fluid and become difficult to identify radiographically relative to the soft tissue opacity surrounding it.[1] A contrast agent may be recommended, as summation signs and border effacement of similarly radiopaque superimposed structures may affect interpretation. Further imaging via cross-sectional modalities including ultrasonography, computed tomography, or magnetic resonance imaging is useful in outlining the extent of a chronic fistulous tract prior to surgical exploration. Benefits to the use of ultrasonography include cost, availability, use of Doppler imaging to characterize vascular involvement, lack of requirement for general anesthesia, and lack of exposure to ionizing radiation. Compared with magnetic resonance imaging, computed tomography may be less expensive, faster, and more readily available, and it does not interfere with cardiac pacemakers or ferromagnetic metal implants. Computed tomography was particularly useful in the dog of this report to identify the wooden gastric foreign body and confirm the lack of penetration into the thoracic cavity prior to surgical exploration.

1. Griffiths LG, Tiruneh R, Sullivan M, et al. Oropharyngeal penetrating injuries in 50 dogs: a retrospective study. *Vet Surg* 2000;29:383–388.