IMAGING DIAGNOSIS—ULTRASOUND UNCOMMON FEATURES OF AN ABDOMINAL GOSSYPIBOMA IN A DOG

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An abdominal mass was incidentally detected in a 12-year-old, neutered female, crossed breed dog. Abdominal ultrasonographic examination showed a well-delineated, irregular, heterogeneous mass that did not generate any distal acoustic shadowing. Transcutaneous US-guided biopsy of the mass were nonconclusive but raised the possibility of neoplasia. Surgery discovered a mass embedded in the omentum and a large quantity of surgical sponges were identified in cut section. To the authors' knowledge, this represents the first published case of gossypiboma casting no characteristic distal acoustic shadowing.

Key words: artifact, foreign body, ultrasound.

Signalment, History, and Clinical Findings

A 12-YEAR-OLD, NEUTERED FEMALE, crossed breed dog was admitted in a rescue facility for a scheduled physical examination. The dog was in a good body condition and free of clinical signs. An abdominal mass was however palpated during the physical examination. The mass was nonpainful, firm, and mobile in the caudal part of the dog's abdomen.

Imaging, Diagnosis, and Outcome

Transcutaneous ultrasonography of the abdomen (Philips Affiniti 50 Ultrasound, Bothell, WA) was performed 15 days after presentation using both a microconvex (C5-8 MHz) and two linear-array transducers (L12-5 and L18-5 MHz, respectively). Abdominal ultrasonography identified a well-delineated, irregular, heterogeneous mass, measuring 6.2 cm in its longest dimension, 3 cm in height, and 3.5 cm in thickness. The mass exhibited a thick hypoechoic outer area and a central hyperechoic area, isoechoic to the peritoneal fat. Small irregular anechoic internal cavities were identified in this inner area. The mass did not generate any distal shadowing artifact. The use of linear and higher frequency transducers did not bring new information (Fig. 1).

The mass could not be related to any abdominal organ. A 27 mm largest dimension mass, ovally shaped, smoothly and well delineated, hyperechoic with small iosechoic areas to the adjacent parenchyma was found in a left liver lobe. No others abnormalities were found, particularly any sign suggestive of an active inflammatory process such as omental or mesentery hyperechogenicity, free fluid, or lymphadenopathy.

Differential diagnosis for the abdominal mass included granuloma, abscess, hematoma, mesothelioma, and other soft tissue neoplasia from vascular, lymphoid, or neuroendrocrine tissue.

The liver mass was nonspecific, and differential diagnosis included benignant as well as malignant neoplasia, although in this particular context, metastasis from the abdominal mass was considered high in the differential diagnosis list.

US-guided needle-core biopsies of the abdominal and liver masses were performed under sedation of the dog. A diffuse fibrinonecrotic and hemorrhagic material was found in the abdominal mass samples. One of the samples seemed to contain vascular lacuna and a definitive diagnostic could not be obtained but a highly necrotic and vascular tumor such as hemangiosarcoma was included in the differential diagnosis. Liver samples were compatible with a focal lipidosis, no neoplastic cells were found. Exploratory laparotomy was performed. The mass was embedded in the omentum and easily removed. A thick fibrous capsule surrounding a large amount of centrally located surgical sponges was found on cut section (Fig. 2). Histopathological analysis was thus not performed. The dog recovered uneventfully.

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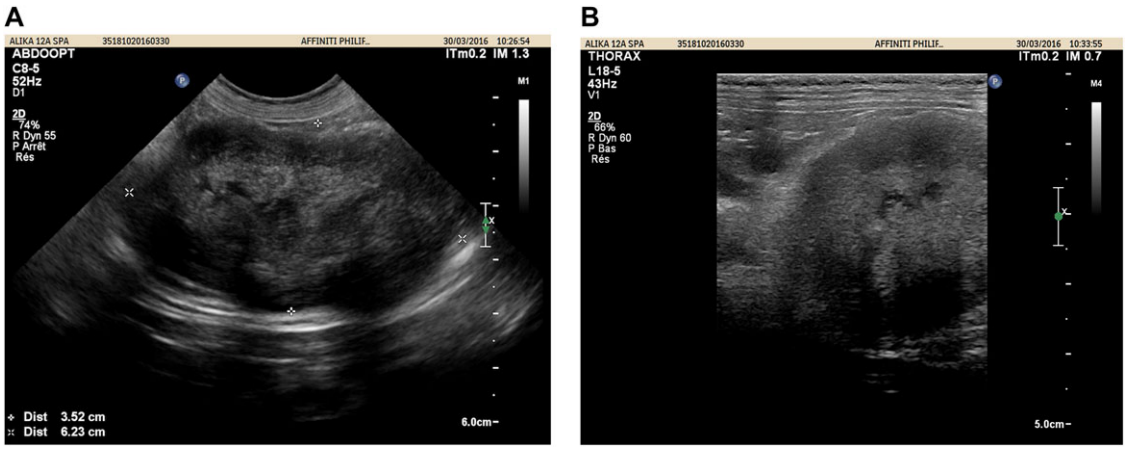

FIG. 1. Longitudinal ultrasound images from the abdominal mass. Microconvex C8-5MHz (A) and Linear L15-8MHz (B) images showing a well-delineated, irregular, heterogeneous lesion, exhibiting a thick hypoechoic outer area and a central hyperechoic area, isoechoic to the peritoneal fat. The mass did not generate any distal shadowing artifact.

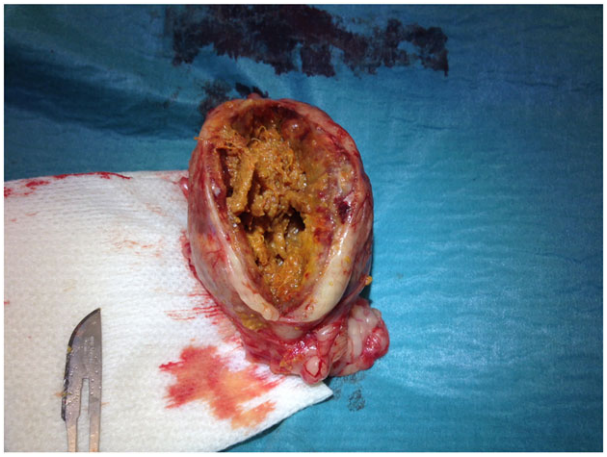

FIG. 2. Cut-section photograph of the mass showing a large amount of centrally located surgical gauzes.

Discussion

The diagnosis of retained surgical sponge (textiloma/gossypiboma) will continue to be an issue as long as nonabsorbable, nonradiopaque materials are used. Two types of foreign-body reactions are classically described; one is an aseptic fibrinous response that creates adhesions and encapsulation resulting in a granuloma as described in our case; the other reaction is exudative and leads to abscess formation with or without bacterial colonization. This type of foreign body reaction is frequently overt clinically, with symptoms and pain frequently reported in the literature. The fibrinous type of foreign body reaction is most often asymptomatic for prolonged period of time, and in the human literature, diagnosis can be done as long as several decades after the involved surgery.[1]

In both human and animal, a strong acoustic shadow with a very homogenous anechoic appearance is systematically reported in cases who benefited from an ultrasound examination.[1–3]

In the absence of strong acoustic shadowing, the differential diagnosis must include granuloma, abscess, hematoma, mesothelioma, and other a soft tissue neoplasia from vascular, lymphoid, neuroendrocrine tissue.

To confuse a textiloma with a tumor is not an exceptional situation,[4–6] particularly with other imaging modalities. Advantageously, the presence of a pure distal acoustic shadow, as systematically reported in the ultrasound literature, strongly supports the diagnosis of textiloma. Here, we report the nonspecific appearance of a textiloma devoid of any characteristic distal acoustic shadowing, however constituted by a large quantity of surgical sponges. To our knowledge, this seems to be the first description of such a situation.

As a rule, this case report allowed us to strengthen the idea that an abdominal mass and a focal hepatic lesion found concurrently should not, without any histopathological proof, lead to the imaging diagnosis of a neoplastic condition with secondary lesions. To make the situation even more confusing, the histological report, although drafted by a pathology diplomate, discussed hemangiosarcoma in the diagnostic differential list of the abdominal mass because of the presence of vascular lacuna and necrosis in the samples. We suspected the very small size of the transmitted samples responsible for these inconclusive results. Histopathological analysis of the mass was not performed after surgical removal, we were thus not able to definitively rule-out hemangiosarcoma emanating from the thinnest tissular periphery of the lesion. However, our purpose was to highlight that the large central area packed with surgical sponges did not generate any expected artifact.

In our case, images were acquired with a high-end US scanner equipped with compound imaging and both high (L15-8 MHz) and relatively low (C5-8 MHz) transducers. Compound imaging influence on acoustic shadowing has been studied and no differences in the appearance and intensity of artifacts have been found with the curved array transducer, which was similarly used in this report.[7] Absence of acoustic shadowing in this case did not depend on the transducers' frequency used and was thus not secondary to technical parameters.

To conclude, textiloma should thus be taken into consideration for the US differential diagnosis of a nonspecific mass, even in the absence of strong distal acoustic shadowing.

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Category 1

(a) Conception and Design: Arnaud Louvet, Anne-Carole Duconseille
(b) Acquisition of Data: Arnaud Louvet
(c) Analysis and Interpretation of Data: Arnaud Louvet

Category 2

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