A 72-year-old man was admitted to the local hospital with a 2-day history of abdominal pain and mild back pain with low-grade fever. Computed tomography (CT) without contrast enhancement demonstrated a fusiform abdominal aortic aneurysm (AAA) of 45×48 mm in the infrarenal aorta and a nephrolith with ectatic renal pelvis. Therefore, antibiotics were given intravenously for 6 days for a diagnosis of pyelonephritis. The patient was then referred to our hospital because of worsening symptoms. His white blood cell count was 12,400/μL. Contrast-enhanced CT revealed a 53×55-mm AAA, which was larger than that of 6 days before, with periaortic fat stranding (Figure 1, left and center, arrows). Importantly, delayed-phase images further identified periaortic fat stranding (Figure 1, right, arrows). Interestingly, under these conditions, ultrasound examination demonstrated homogeneous, hyperechogenic, and thickened tissue adjacent to the surrounding AAA (Figure 2, arrows, and Movie I in the online-only Data Supplement). Thus, an infected aneurysm was suspected because of the rapid development and size dilatation of the aneurysm, although the blood culture was negative. The patient immediately underwent open surgical repair with omental coverage for infected AAA. A surgical specimen showed histopathologically intensive neutrophilic infiltrate destroying the aortic wall with thickened adventitia (Figure 3). A few gram-positive cocci were seen by Gram staining. The postoperative course was satisfactory and uncomplicated.

Infected AAA is a life-threatening disease with a high mortality rate. Thus, rapid diagnosis of infected AAA before rupture is important. Clinical diagnosis of infected AAA is made on the basis of the presence of nonspecific symptoms and signs such as fever, abdominal or back pain, and leukocytosis combined with a pulsatile abdominal mass. Therefore, diagnosis of infected AAA depends mainly on radiological modality; specifically, contrast-enhanced CT provides valuable information to demonstrate saccular shape with lobulated contour and characteristic findings such as periaortic soft-tissue mass, fat stranding, gas bubbles, and fluid collections.\(^{1,2}\)

In particular, the presence of subtle periaortic fat stranding in contrast-enhanced CT scan may be an early-stage finding in infected AAA.\(^{1,3}\) Interestingly, as shown in Figure 2, ultrasound can clearly demonstrate the periaortic fat stranding as circumferential periaortic hyperechogenic tissue in infected AAA. Ultrasound examination produces superior CT-like images and appears to be useful for the noninvasive diagnosis of infected AAA, although further prospective examination should be done to demonstrate its sensitivity and specificity.

Disclosures

None.

References

Figure 1. Contrast-enhanced computed tomography showing abdominal aortic aneurysm associated with subtle periaortic fat stranding with thickened aortic wall. **Left**, Coronal multiplanar reconstruction. **Center**, Early-phase axial images. **Right**, Delayed-phase axial images. Note that periaortic fat stranding (arrows) was clearly imaged, particularly in the delayed phase.

Figure 2. An ultrasound in short-axis view showing the homogeneous, hyperechogenic, thickened tissue adjacent to the surrounding abdominal aortic aneurysm (arrows).

Figure 3. Microscopic finding of resected tissue. A photomicrograph of thickening aneurysm wall shows abscess-like neutrophil infiltrate spreading to adventitia (hematoxylin and eosin stain; magnification, ×10).
Circumferential Hyperechogenecity as an Ultrasound Sign of Infected Abdominal Aortic Aneurysm
Tsuyoshi Yoshimuta, Toshiya Okajima, Hatsue Ishibashi-Ueda, Mika Mori, Masahiro Higashi, Kenshi Hayashi, Masa-aki Kawashiri and Masakazu Yamagishi

doi: 10.1161/CIRCULATIONAHA.112.137521

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Movie Legend

Movie 1. (AVI file) (1.40 MB) Ultrasound in short-axis view demonstrated the homogeneous, hyperechogenic, thickened tissue adjacent to surround the abdominal aortic aneurysm.

(Windows Media Player is recommended for viewing this file)