

CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 65 year old man comes for a “welcome to Medicare” physical examination. His medical history includes coronary artery disease with prior bypass surgery. His father had undergone coronary bypass surgery twice and died at age 72; his mother also died at age 72 and had hypertension. His blood pressure is 122/80, his temperature is 98.2, his pulse is 64, and his respiratory rate is 16. On physical examination, there is a supraumbilical midline pulsatile mass. The abdomen is soft and nontender.

Which of the following studies is recommended (by the American College of Cardiology and the American Heart Association) for abdominal aortic aneurysm (AAA) screening in men over the age of 65 who have a history of smoking?

- (a) PA and lateral plain films of the abdomen
- (b) computed tomography (CT) angiography of the abdomen and pelvis
- (c) ultrasound (US) of the aorta and iliac vessels
- (d) magnetic resonance (MR) angiography of the abdomen and pelvis

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

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- (c) ultrasound (US) of the aorta and iliac vessels
- (d) magnetic resonance (MR) angiography of the abdomen and pelvis

Ultrasound (US) of the aorta and iliac vessels (c) is currently recommended by the American College of Cardiology and the American Heart Association for abdominal aortic aneurysm (AAA) screening in men over the age of 65 who have a history of smoking. It is also recommended for screening men over the age of 60 who have a parent or sibling with a AAA.

The ACC/AHA do *not* recommend PA and lateral plain films of the abdomen (a), CT angiography (b) or MR angiography (d) for screening of patients, and these options are false.

Note that the question has to do with *screening* patients, whereas the patient presented in this case has a clinical finding.

IMAGING STUDY AND QUESTIONS

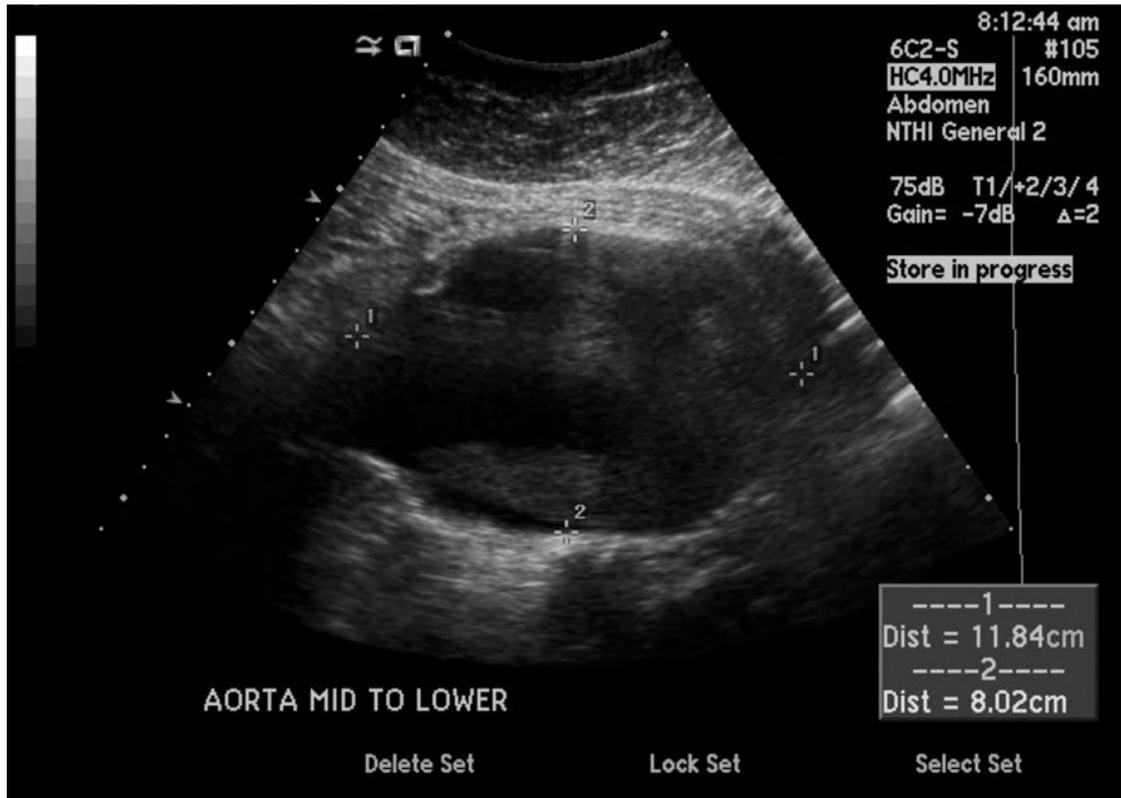
The patient underwent imaging:



Imaging questions:

- 1) What type of study is shown?
- 2) Are there any abnormalities?
- 3) What is the most likely diagnosis?
- 4) What is the next step in management?

IMAGING STUDY QUESTIONS AND ANSWER



Imaging questions:

- 1) What type of study is shown? An abdominal aortic aneurysm.
- 2) Are there any abnormalities? Yes. There is a distended abdominal aorta, measuring over 8 cm in AP dimension.
- 3) What is the most likely diagnosis? Abdominal aortic aneurysm.
- 4) What is the next step in management? In general, abdominal aortic aneurysms greater than 5.5 cm should be referred for surgical consultation.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP

The patient's abdominal ultrasound was performed on May 16. The primary care provider was notified of the result and the patient was immediately sent to a vascular surgeon and underwent an abdominal aortic aneurysm repair with aortobi-iliac graft placement on May 17th. The procedure went well with no complications. A follow-up CT of the abdomen (illustrated below) documented the graft and showed no complication.



65 year old man status post aortobi-iliac graft placed for an abdominal aortic aneurysm. CT demonstrates the proximal (A), mid (B), and distal (C) aspect of the graft, with return of the aortic lumen to a normal caliber compared to the 8 cm measurement seen on the patient's pre-operative ultrasound study (page 3).

SUMMARY

Presenting symptom: In patients with a pulsating abdominal mass, the primary consideration is for an abdominal aortic aneurysm. In slender individuals, the abdominal aorta may feel quite prominent as there is little tissue between the abdominal aorta and the anterior abdominal wall skin surface.

Imaging work-up: Patients with a pulsating abdominal mass may be evaluated with ultrasound, CT or MR. Ultrasound has the advantages of lower cost and no ionizing radiation and is generally a good first step to establish the diagnosis of abdominal aortic aneurysm.

Establishing the diagnosis: Classic features on an aortic ultrasound establish the diagnosis of an aortic aneurysm, but it is often necessary to know the exact relationship between the margins of the aneurysm and the vessels branching off of the aorta, particularly the renal arteries. This relationship is usually best delineated by use of CT angiography.

Take-home message: The American College of Cardiology and the American Heart Association recommend screening abdominal aortic ultrasound in *asymptomatic* men over the age of 60 with at least one parent or sibling with a history of abdominal aortic aneurysm, and in men over the age of 65 with a history of smoking. For otherwise asymptomatic patients with a pulsatile abdominal mass suspected to be an abdominal aortic aneurysm, ultrasound is a good first step to establish the diagnosis. In patients who have other symptoms (such as abdominal pain) or in whom alternate diagnosis need to be excluded, CT of the abdomen and pelvis may be performed.

FURTHER READING

Hirsch AT, Haskal ZJ, Hertzler NR et al. ACC/AHA 2005 Guidelines. J Am Coll Cardiol 2006;47:1239-1312.

Renfrew, DL. Vascular imaging. Chapter 12 of *Symptom Based Radiology*, Symptom Based Radiology Publishing, Sturgeon Bay, WI, 2010, available for no charge at www.symptombasedradiology.com.