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ACR PRACTICE GUIDELINE FOR THE PERFORMANCE OF DIAGNOSTIC AND SCREENING ULTRASOUND OF THE ABDOMINAL AORTA

PREAMBLE

These guidelines are an educational tool designed to assist practitioners in providing appropriate radiologic care for patients. They are not inflexible rules or requirements of practice and are not intended, nor should they be used, to establish a legal standard of care. For these reasons and those set forth below, the American College of Radiology cautions against the use of these guidelines in litigation in which the clinical decisions of a practitioner are called into question.

The ultimate judgment regarding the propriety of any specific procedure or course of action must be made by the physician or medical physicist in light of all the circumstances presented. Thus, an approach that differs from the guidelines, standing alone, does not necessarily imply that the approach was below the standard of care. To the contrary, a conscientious practitioner may responsibly adopt a course of action different from that set forth in the guidelines when, in the reasonable judgment of the practitioner, such course of action is indicated by the condition of the patient, limitations on available resources or advances in knowledge or technology subsequent to publication of the guidelines. However, a practitioner who employs an approach substantially different from these guidelines is advised to document in the patient record information sufficient to explain the approach taken.

The practice of medicine involves not only the science, but also the art of dealing with the prevention, diagnosis, alleviation, and treatment of disease. The variety and

complexity of human conditions make it impossible to always reach the most appropriate diagnosis or to predict with certainty a particular response to treatment. Therefore, it should be recognized that adherence to these guidelines will not assure an accurate diagnosis or a successful outcome. All that should be expected is that the practitioner will follow a reasonable course of action based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. The sole purpose of these guidelines is to assist practitioners in achieving this objective.

The clinical aspects of this guideline (Indications, Specifications of the Examination, and Equipment Specifications) were developed collaboratively by the American College of Radiology (ACR) and the American Institute of Ultrasound in Medicine (AIUM). Recommendations for physician requirements, procedure documentation, and quality control vary between the two organizations and are addressed by each separately.

I. INTRODUCTION

This guideline has been developed to assist in the performance and interpretation of the dedicated sonographic examination of the abdominal aorta. The examination may be performed as a diagnostic or a screening study. Comprehensive population screening programs have not yet been developed in the United States but do exist elsewhere in the world (1,2). While it is not possible to detect every abnormality, following this guideline will maximize the detection of abnormalities of the abdominal aorta.

II. INDICATIONS/CONTRAINDICATIONS

Indications for ultrasound of the abdominal aorta include, but are not limited to:

A. Diagnostic Evaluation for Abdominal Aortic Aneurysm

1. Palpable pulsatile abdominal mass
2. Unexplained lower back pain or abdominal pain
3. Known extremity aneurysmal disease
4. Follow-up of a previously demonstrated abdominal aortic aneurysm
5. Follow-up of patients with history of placement of aortic or iliac endoluminal graft

B. Screening Evaluation for Abdominal Aortic Aneurysm

1. Men age 65 or older.
2. Women age 65 or older with cardiovascular risk factors.
3. Family history of aortic and peripheral vascular aneurysmal disease.

Groups that should be seriously considered for screening include patients with a history of smoking, hypertension, and a family history of aortic aneurysm in a first-degree relative.

There are no absolute contraindications to ultrasound of the aorta. If aortic rupture or dissection is clinically suspected, ultrasound is usually not the examination of choice.

III. QUALIFICATIONS AND RESPONSIBILITIES OF PERSONNEL

See the ACR Practice Guideline for Performing and Interpreting Diagnostic Ultrasound Examinations.

IV. SPECIFICATIONS OF THE EXAMINATION

A. Diagnostic Examination

The examination includes the following, when feasible:

1. Abdominal aorta
 - a. Transverse images
 - i. Proximal (near diaphragm)
 - ii. Mid
 - iii. Distal
 - b. Longitudinal images with anteroposterior (AP) measurements
 - i. Proximal
 - ii. Mid
 - iii. Distal

2. Common iliac arteries
 - a. Transverse image of proximal common iliac arteries at the bifurcation.
 - b. Longitudinal images with AP measurements of the proximal right and left common iliac arteries at the bifurcation.
3. Color Doppler imaging and/or spectral Doppler with waveform analysis, as indicated. This portion of the exam is critical when assessing patients who have had placement of an endoluminal graft.
4. Documentation of mural thrombus, if present.

All measurements are made from outer wall to outer wall perpendicular to the long axis of the aorta. If an aneurysm is seen, the maximal AP diameter should be recorded. The transverse diameter should also be measured when the margins of the aneurysm are clearly seen. The relationship of the dilated segment to the renal arteries also should be determined if possible.

Interobserver measurements can vary by as much as 5 mm. Because of this variation, comparison with previous studies is important to determine whether or not a significant change in size has occurred.

B. Screening Examination for Abdominal Aortic Aneurysm

1. Abdominal aorta
 - a. Transverse images
 - i. Proximal (near diaphragm)
 - ii. Mid
 - iii. Distal
 - b. Longitudinal images with AP measurements
 - i. Proximal
 - ii. Mid
 - iii. Distal

All of the images obtained should be stored and made available when they are requested by the patient for use in directing further diagnostic workup of the patient. A copy of the screening report should accompany the images.

Interpretation of the screening examination should include at least 3 categories:

1. Positive (abdominal aortic aneurysm equal to or greater than 3 cm in diameter).
2. Negative (no abdominal aortic aneurysm seen).
3. Indeterminate (aneurysmal status not defined because of nonvisualization or only partial visualization of the abdominal aorta).

V. DOCUMENTATION

Adequate documentation is essential for high-quality patient care. There should be a permanent record of the

sonographic examination and its interpretation. Images of all appropriate areas, both normal and abnormal, should be recorded in an appropriate format. Variations from normal size should be accompanied by measurements. Images are to be appropriately labeled with the examination date, patient identification, and image orientation. A report of the sonographic findings should be included in the patient's medical record. Retention of the permanent record of the sonographic examination should be consistent both with clinical need and with the relevant legal and local healthcare facility requirements.

Reporting and communication efforts should be in accordance with the ACR Practice Guideline for Communication of Diagnostic Imaging Findings.

VI. EQUIPMENT SPECIFICATIONS

Abdominal aortic ultrasound should be performed with real-time scanners with transducers that allow for appropriate penetration and resolution, depending on the patient's body habitus. Diagnostic information should be optimized, while keeping total ultrasound exposure as low as reasonably achievable.

VII. QUALITY CONTROL AND IMPROVEMENT, SAFETY, INFECTION CONTROL, AND PATIENT EDUCATION CONCERNS

Policies and procedures related to quality, patient education, infection control, and safety should be developed and implemented in accordance with the ACR Policy on Quality Control and Improvement, Safety, Infection Control, and Patient Education Concerns appearing elsewhere in the ACR Practice Guidelines and Technical Standards book.

Equipment performance monitoring should be in accordance with the ACR Technical Standard for Diagnostic Medical Physics Performance Monitoring of Real Time Ultrasound Equipment.

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Principal Drafter: Raymond E. Bertino, MD

Collaborative Subcommittee

ACR

John S. Pellerito, MD, Chair

Teresita L. Angtuaco, MD
Ewa Kuligowska, MD
Michelle L. Robbin, MD

AIUM

Edward I. Bluth, MD
Michael C. Hill, MD
Jon W. Meilstrup, MD
Deborah J. Rubens, MD

Barbara S. Hertzberg, MD (SRU)
Albert A. Nemcek, Jr., MD (Interventional Rep)

ACR Guidelines and Standards Committee

Gretchen A. Gooding, MD, Chair
Raymond E. Bertino, MD
Ulrike M. Hamper, MD
Robert D. Harris, MD
Barbara S. Hertzberg, MD
Robert A. Kane, MD
Beatrice L. Madrazo, MD
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Miriam N. Mikhail, MD
Sara M. O'Hara, MD
John S. Pellerito, MD
Catherine W. Piccoli, MD
Ronald R. Townsend, MD
Carol M. Rumack, MD, Chair, Commission

Comments Reconciliation Committee

Marcela Bohm-Velez, Chair, CSC
Paul H. Ellenbogen, MD
Paul A. Larson, MD
Raymond E. Bertino, MD
Edward I. Bluth, MD
Gretchen A. Gooding, MD
Beatrice L. Madrazo, MD
Laurence Needleman, MD
John S. Pellerito, MD
Carol M. Rumack, MD

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