Complete Summary

GUIDELINE TITLE

Procedure guideline for diagnosis of renovascular hypertension.

BIBLIOGRAPHIC SOURCE(S)

Taylor AT Jr, Blaufox MD, Dubovsky EV, Fine EJ, Fommei E, Granerus G, Kahn D, Nally JV Jr, Oei HY, Prigent A, Sfakianakis GN, Treves ST. Procedure guideline for diagnosis of renovascular hypertension, 3.0. Reston (VA): Society of Nuclear Medicine; 2003 Jun 20. 8 p. [27 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Society of Nuclear Medicine. Procedure guideline for diagnosis of renovascular hypertension, 2.0. Reston (VA): Society of Nuclear Medicine; 1999 Feb. 21 p. (Society of Nuclear Medicine procedure guidelines; no. 2.0).

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

Renovascular hypertension

GUIDELINE CATEGORY

Diagnosis
Evaluation
Screening

CLINICAL SPECIALTY

Nuclear Medicine
Radiology

INTENDED USERS

Allied Health Personnel
Physicians

GUIDELINE OBJECTIVE(S)

To assist nuclear medicine practitioners in recommending, performing, interpreting, and reporting the results of renal procedures for diagnosis of renovascular hypertension

TARGET POPULATION

Adults and children with suspected renovascular hypertension

INTERVENTIONS AND PRACTICES CONSIDERED

Angiotensin-converting enzyme inhibitor (ACEI) renography with ^{99m}Tc-mercaptoacetyltriglycine (MAG-3) or ^{99m}Tc-diethylenetriaminepentaacetic acid (DTPA)

MAJOR OUTCOMES CONSIDERED

Sensitivity and specificity of angiotensin-converting enzyme inhibitor (ACEI) renography

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Literature searches were performed. In addition, references known to experts and references from the nuclear medicine community were considered.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Drafts of the guideline were submitted to members of the Guideline Development subcommittee (methodologists) and the Task Force (subject experts). These reviewers indicated on a line-by-line basis any suggestions or recommendations for the revision of the guideline. The percentage of agreement for all reviewers was calculated for each revision and compiled by the Society of Nuclear Medicine (SNM) central office. It is expected that the percentage of agreement will increase with each revision.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

When the Task Force and Guideline Development Subcommittee completed their edits, draft procedure guidelines were distributed to the Society of Nuclear Medicine (SNM) Sample Review Group for comment. (The SNM Sample Review

Group is a cross-section of approximately 100 nuclear medicine practitioners representing every field of specialization).

The guideline was approved by the SNM Commission on Health Care Policy, the Board of Directors, and the House of Delegates.

The updated guideline was approved June 20, 2003.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Background Information and Definitions

Renovascular disease includes renal artery stenosis, renovascular hypertension, and azotemic renovascular disease (ischemic nephropathy). It is important to distinguish between renovascular hypertension and renal artery stenosis. Stenosis of the renal artery is common in nonhypertensive elderly persons and is an associated but nonetiologic finding in a number of hypertensive patients. Renovascular hypertension is defined as an elevated blood pressure caused by renal hypoperfusion, usually resulting from anatomic stenosis of the renal artery and activation of the renin-angiotensin system. Azotemic renovascular disease refers to renal functional impairment associated with renal atrophy, intrarenal vascular lesions, and interstitial nephritis and fibrosis in the presence of severe atherosclerotic renal artery stenosis. Causes of renovascular hypertension in neonates and infants include renal artery thrombosis after umbilical artery catheterization and coarctation of the aorta. The goal of a screening test for renovascular hypertension in adults is to detect those patients who have renal artery stenosis as the cause of hypertension and to predict curability or amelioration of hypertension following intervention.

Renovascular hypertension is estimated to affect fewer than 1 to 3% of the unselected hypertension population and up to 15 to 30% of patients referred to a subspecialty center because of refractory hypertension. Clinical features should indicate which patients have moderate or high risk of renovascular hypertension. Clues include abrupt or severe hypertension, hypertension resistant to 3-drug therapy, bruits in the abdomen or flank, unexplained azotemia or recurrent pulmonary edema in an elderly hypertensive patient, or worsening renal function during therapy with angiotensin-converting enzyme (ACE) inhibitors (ACEIs). ACEI renography is designed to be a test for renovascular hypertension, not for renal artery stenosis. The optimal reference test or "gold standard" in future studies should be the outcome--the response to successful revascularization--not angiographic evidence of renal artery stenosis.

Common Indications

The test is most cost-effective if used primarily in patients who have a moderate-to-high risk of having renovascular hypertension. Clinical features associated with a moderate to high risk of renovascular hypertension have been published and include:

- Abrupt or severe hypertension
- Hypertension resistant to 3-drug therapy in a compliant patient
- Abdominal or flank bruits
- Unexplained azotemia in an elderly hypertensive patient
- Worsening renal function during antihypertensive therapy, especially with ACEIs or angiotensin II receptor blockers
- Grade 3 or 4 hypertensive retinopathy
- Occlusive disease in other vascular beds
- Onset of hypertension under age 30 years or over age 55 years
- Recurrent pulmonary edema in an elderly hypertensive patient
- Hypertension in infants with an umbilical artery catheter
- Hypertension in children

Procedure

The detailed procedure recommendations in the guideline address the following areas: patient preparation; information pertinent to performing the procedure (i.e., important data that the physician should have about the patient at the time the exam is performed and interpreted); precautions; information regarding the radiopharmaceutical (i.e., ranges of administered activity, organ receiving the largest radiation dose, effective dose); image acquisition; interventions; processing; interpretation/reporting; quality control; and sources of error.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not specifically stated.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

The intent of the procedure guideline is to describe renal procedures for diagnosis of renovascular hypertension, in order to maximize the diagnostic information obtained in the study while minimizing the resources that are expended.

POTENTIAL HARMS

Angiotensin-converting enzyme inhibitors (ACEIs) can cause significant hypotension. Therefore, blood pressure and pulse should be monitored and recorded before ACEI and radiopharmaceutical administration, every 5 to 15 minutes thereafter, and at the end of the study. An intravenous line should be established in high-risk patients (history of carotid disease, stroke, transient ischemic attack, angina, recent myocardial infarction, and severe salt depletion after diuretics) and in patients who receive intravenous enalaprilat or who are

taking diuretics. A patient should not be sent home unless the standing mean blood pressure is at least 70% of baseline.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The Society of Nuclear Medicine has written and approved guidelines to promote the cost-effective use of high quality nuclear medicine procedures. These generic recommendations cannot be applied to all patients in all practice settings. The guidelines should not be deemed inclusive of all proper procedures or exclusive of other procedures reasonably directed to obtaining the same results. The spectrum of patients seen in a specialized practice setting may be quite different than the spectrum of patients seen in a more general practice setting. The appropriateness of a procedure will depend in part on the prevalence of disease in the patient population. In addition, the resources available to care for patients may vary greatly from one medical facility to another. For these reasons, guidelines cannot be rigidly applied.
- Advances in medicine occur at a rapid rate. The date of a guideline should always be considered in determining its current applicability.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 Feb (updated 2003 Jun 20)

GUIDELINE DEVELOPER(S)

Society of Nuclear Medicine, Inc - Medical Specialty Society

SOURCE(S) OF FUNDING

Society of Nuclear Medicine (SNM)

GUIDELINE COMMITTEE

Task Force

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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GUIDELINE AVAILABILITY

Electronic copies: Available from the Society of Nuclear Medicine (SNM) Web site.

Print copies: Available from SNM, Division of Health Care Policy, 1850 Samuel Morse Dr, Reston, VA 20190-5316; Phone: 1-800-513-6853 or 1-703-326-1186; Fax: 703-708-9015; E-Mail: ServiceCenter@snm.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Society of Nuclear Medicine. Procedure guideline for guideline development. Reston (VA): Society of Nuclear Medicine; 2001 Jun (version 3.0). Electronic copies: Available from the Society of Nuclear Medicine Web site.
- Society of Nuclear Medicine. Performance and responsibility guidelines for NMT. Reston (VA): Society of Nuclear Medicine; 2003. Electronic copies: Available from the Society of Nuclear Medicine Web site.

Print copies: Available from SNM, Division of Health Care Policy, 1850 Samuel Morse Dr, Reston, VA 20190-5316; Phone: 1-800-513-6853 or 1-703-326-1186; Fax: 703-708-9015; E-Mail: ServiceCenter@snm.org.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on July 20, 1999. It was verified by the guideline developer as of August 5, 1999. This summary was updated by ECRI on April 14, 2005.

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