



Complete Summary

GUIDELINE TITLE

Procedure guideline for gastrointestinal bleeding and Meckel's diverticulum scintigraphy.

BIBLIOGRAPHIC SOURCE(S)

Procedure guideline for gastrointestinal bleeding and Meckel's diverticulum scintigraphy, 1.0. J Nucl Med 1999 Jul; 40(7): 1226-32. [27 references]

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SCOPE

DISEASE/CONDITION(S)

- Gastrointestinal bleeding
- Meckel's diverticulum

GUIDELINE CATEGORY

Diagnosis
Evaluation

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 gastrointestinal bleeding and Meckel's diverticulum scintigraphy

TARGET POPULATION

Adults and children suspected of having active gastrointestinal bleeding

INTERVENTIONS AND PRACTICES CONSIDERED

- Gastrointestinal bleeding scintigraphy with Tc-99m labeled red blood cells
- Meckel's diverticulum scintigraphy with Tc-99m pertechnetate

MAJOR OUTCOMES CONSIDERED

Not stated

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 applicable

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.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Background Information and Definitions

Gastrointestinal bleeding scintigraphy is performed in patients suspected of active gastrointestinal bleeding using Tc-99m labeled red blood cells (RBCs). Sites of active bleeding are identified by the accumulation and movement of labeled Red Blood Cells within the bowel lumen. Since activity within the lumen of the bowel can move antegrade and retrograde, frequent images (1 image every 10 to 60 sec) will increase the accuracy of localizing the bleeding site. Tc-99m sulfur colloid (SC) is rarely used today because of the short residence time within the blood. Tc-99m SC is cleared from the blood by the reticuloendothelial system with a half-time as short as 2 to 3 min while radiolabeled RBCs last for hours.

Gastrointestinal bleeding (GI) is either upper, originating above the ligament of Treitz, or lower, distal to the ligament of Treitz. Frequent causes of upper GI bleeding include esophageal varices, gastric and duodenal ulcers, gastritis, esophagitis, Mallory-Weiss tear or neoplasm. Causes of lower GI hemorrhage include angiodysplasia, diverticula, neoplasms and inflammation, and, in children, Meckel's diverticulum. Endoscopy and angiography provide accurate localization of bleeding sites and potentially therapeutic control. Scintigraphy with labeled RBCs is complementary to endoscopy and angiography because it permits continuous monitoring over hours. This is a major advantage over intermittent sampling since most GI bleeds are intermittent and therefore frequently missed.

The clinical findings for active gastrointestinal hemorrhage are often unreliable and misleading. There is frequently a marked temporal lag between the onset of bleeding and the clinical findings. While it may be clinically apparent that the patient has bled from the presence of melena or hematochezia, the blood may pool in the colon for hours before being evacuated. A drop in the hematocrit and elevated serum blood urea nitrogen (BUN) also lack the temporal resolution needed to indicate active bleeding. Orthostatic hypotension and tachycardia occur more acutely but are insensitive and non-specific.

In cases where there is only occult bleeding detected by guaiac positive stools, gastrointestinal bleeding scintigraphy is unlikely to be useful. Gastrointestinal bleeding scintigraphy can detect bleeding rates as low as 0.1 to 0.35 ml per min. The guaiac test detects bleeding at rates well below the level necessary to be seen on gastrointestinal bleeding scintigraphy.

Meckel's Diverticulum Scintigraphy

A Meckel's diverticulum is a vestigial remnant of the omphalomesenteric duct located on the ileum about 50 to 80 cm from the ileocecal valve. About half of Meckel's diverticuli have gastric mucosa. Bleeding may result from ileal mucosal ulceration from acid secretion. Tc-99m pertechnetate avidly accumulates in gastric mucosa and is the study of choice for identifying ectopic gastric mucosa in a Meckel's diverticulum.

Common Indications

Gastrointestinal Bleeding Scintigraphy

The goals of gastrointestinal bleeding scintigraphy are to locate the bleeding site and to determine who requires aggressive treatment versus those who can be medically managed. It is usually in those patients that require urgent care that

the bleeding site is identified. In some patients, the bleeding site is identified with sufficient confidence for specific surgical intervention (e.g. right hemicolectomy in the case of a bleeding site in the ascending colon). If bleeding is detected, the site is usually localized well enough to direct the next diagnostic test (e.g. endoscopy or arteriography). Gastrointestinal scintigraphy should be done as soon as possible after the patient presents for medical care, since active bleeding is more likely at early times and is needed for correct localization.

Meckel's Diverticulum Scintigraphy

The indication for a Meckel's scintiscan is to localize ectopic gastric mucosa in a Meckel's diverticulum as the source of unexplained gastrointestinal bleeding. Bleeding Meckel's diverticula usually occur in young children. The Meckel's scintiscan should be used when the patient is not actively bleeding. Even in young children, active bleeding is best studied by radiolabeled RBC scintigraphy.

Procedure

The detailed procedure recommendations in the original guideline address the following areas: facility/personnel, 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

Not stated

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

The intent of the procedure guideline is to describe gastrointestinal bleeding and Meckel's diverticulum scintigraphy, in order to maximize the diagnostic information obtained in the study while minimizing the resources that are expended.

POTENTIAL HARMS

The removal of blood for radiolabeling and reinjection poses the risk of misadministration to the wrong patient. The handling and administration of blood

products must be subject to special safeguards and procedures, the goals of which are to eliminate any possibility of administration to the wrong patient or contamination of workers. Refer to "Special Considerations for Labeled Blood Products" in the Society of Nuclear Medicine Procedure Guideline for Use of Radiopharmaceuticals. (Available from the [Society of Nuclear Medicine \(SNM\) Web site](#).)

QUALIFYING STATEMENTS

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The Society of Nuclear Medicine has developed 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

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

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

DATE RELEASED

1999 Jul

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

The Task Force consists of members from both academic and nonacademic practice settings.

Names of Task Force Members: Patrick Ford, MD, Chair; Stephen Bartold, MD; Darlene Fink-Bennett, MD; Paul Jolles, MD; Robert Lull, MD; Alan Maurer, MD; and James Seabold, MD.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

The guideline developer states that the guideline is subject to a bi-annual update/revision cycle.

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 is 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](#).

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NGC STATUS

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

COPYRIGHT STATEMENT

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