Overview

The Esophageal Transit Study demonstrates the movement of a bolus of swallowed material through the esophagus and into the stomach in a physiologic and quantitative fashion.

Indications

Evaluate and quantitate esophageal motility (1-4).

*Exams ordered for indications which are not listed above need to be discussed with the Nuclear Medicine Physician.

Examination Time

30 minutes.

Patient Instructions / Scheduling

Schedule exams in the morning.

NPO after midnight.

Lab / Image Correlation

Lab: None.

Image Correlation: Upper GI, if available.

Patient Preparation

Overnight fast (4).

Rehearse the patient in the swallowing technique (see below).

Equipment & Energy Windows

Gamma camera: Large field of view.

Collimator: Low energy, high resolution, parallel hole.

Energy window: 20% window centered at 140 keV.
Radiopharmaceutical, Dose, & Technique of Administration

Radiopharmaceutical: Technetium-99m Sulphur Colloid or Microlite, 300 µCi in 15 cc of water (4,5).

Dose: 300-500 µCi of Tc-99m-sulfur colloid (5).

Technique of administration: Oral through a straw (5).

Patient Position & Imaging Field

Patient position: Supine.

Imaging field: Entire esophagus (chest).

Acquisition Protocol (5)

The following procedure should be practiced first with the patient taking a sip of regular water.

With the patient supine, position the camera anteriorly so field includes entire esophagus and stomach.

Have the patient take the full 15-cc of liquid into the mouth through a straw, hold, and then perform a single swallow on command. Initiate acquisition immediately before giving the command to swallow. The patient then performs dry swallowing at 15-second intervals for 10 minutes. Time the swallows by following the computer monitor. The protocol has a 2-interval flow (0.5-second flow for 60 seconds; 15-second flow for 600 seconds).

After the study is complete, have the patient drink a 12-oz glass of water to wash any residual activity out of the esophagus.

Data Processing (4)

Using the Xeleris software, place a region of interest over the entire esophagus beginning from the cricoid cartilage and avoiding the stomach. Draw a stomach region of interest. If requested the above can be repeated with the esophagus divided into thirds.

Normal equals an Esophageal Transit Percent of 90% or better at 15 seconds (5,7).
Principle Radiation Emission Data - Tc-99m (11)

Physical half-life = 6.01 hours.

<table>
<thead>
<tr>
<th>Radiation</th>
<th>Mean % per disintegration</th>
<th>Mean energy (keV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gamma-2</td>
<td>89.07</td>
<td>140.5</td>
</tr>
</tbody>
</table>

Dosimetry - Tc-99m-Sulfur Colloid by Mouth (12)

<table>
<thead>
<tr>
<th>Organ</th>
<th>rads/300 µCi</th>
<th>mGy/11.1 MBq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large intestine</td>
<td>0.16</td>
<td>1.6</td>
</tr>
<tr>
<td>Small intestine</td>
<td>0.08</td>
<td>0.8</td>
</tr>
<tr>
<td>Ovaries</td>
<td>0.03</td>
<td>0.3</td>
</tr>
<tr>
<td>Stomach</td>
<td>0.03</td>
<td>0.3</td>
</tr>
<tr>
<td>Whole body</td>
<td>0.01</td>
<td>0.1</td>
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</tbody>
</table>

References


Normal Findings


JSM
PROTOCOL\05-7
Rev. 7/1/2017

Note:

1. This procedure has not yet been reviewed by the Society of Nuclear Medicine procedure guideline development process.
2. This procedure adheres to the ACR Standards, 1997.