

GASTROESOPHAGEAL REFLUX

UPDATED: APRIL 2010

CPT CODE: 78262

Special

Considerations: This test is done differently in infants (see below).

Indications:

To determine presence or absence of gastroesophageal reflux and/or pulmonary aspiration.

Patient Prep:

The patient must be NPO 4 hours prior to test. In infants, this may need to be reduced (to coincide with normal feeding schedule). In infants, a gastric tube must be in place (placed by referring ward or clinic) and NM allowed to pull it after instillation of tracer.

Scheduling:

Allow one hour, in the morning.

Radiopharmaceutical

& Dose:

Tc-99m-Sulfur Colloid 1 mCi +/- 20% (0.8-1.2 mCi, adjusted for weight per nomogram/NMIS) in 150 mL of orange juice mixed with equal volume 0.1 N HCl, administered orally. For infants, weight-adjusted dose in formula.

Imaging Device:

Gamma camera with LEHR collimation.

Imaging Procedure:

For adults, imaging begins 15 min after ingestion of the radiopharmaceutical preparation; the time delay allows for completed esophageal emptying.

For infants, imaging begins immediately.

N.B. Binder is not used in children <12 years of age.

ADULTS:

- A. Standing: In camera mode, check to see if esophagus is clear. If not, an additional 50-100 cc of liquid (equal amounts of orange juice and HCl) should be given.
- B. Supine: (2 binders are used. Place the folded thigh cuff on top of the patient's abdomen at belt level, and tape in place. Wrap the Radiology IVP binder around the patient with the Lucite block over the thigh cuff. The IVP binder has an extension for larger patients. The thigh cuff can now be inflated at the manometer settings of:

0 mm Hg, for 60 sec 20 mm Hg, for 60 sec

40 mm Hg, for 60 sec 60 mm Hg, for 60 sec

80 mm Hg, for 60 sec 100 mm Hg, for 60 sec

- C. Delayed: Lungs may be imaged immediately after study and at 4-6 and/or 24 hours if indicated for pulmonary aspiration.

INFANTS: As soon as formula is instilled in gastric tube, the tube is pulled, and the infant is laid supine and images obtained (128 matrix, 10 sec/frame for 1 hr) to detect GE reflux. Before instilling tracer check to see if correctly located. Binders are not used. It is routine to obtain views of lungs at 60 min, 4-6 hr, and possibly 24 hr.

Data Analysis:

Each 20 mmHg increment of pressure represents approximately a 5 mmHg pressure rise at the gastroesophageal junction.

Gastroesophageal reflux is quantitated in the following way using computer acquired data:

R = Gastroesophageal reflux

E = Esophageal counts during each 60 second frame

E_b = Esophageal background counts during each 60 frame

G = Gastric counts during each 60 second frame

R = $\frac{E - E_b}{G} \times 100$

G

R ≥ 4% corresponds to a positive test for gastroesophageal reflux.

Interpretation: Abnormal results include:

1. > 4% aspiration
2. Evidence of pulmonary aspiration in infants.

The test is much more sensitive for gastroesophageal reflux than barium studies (15-20% sensitivity). Acidification of the test material increases the sensitivity of the nuclear medicine test as the acidity of orange juice/HCl mixture delays gastric emptying and lowering the lower esophageal sphincter pressure. Using the above criteria (visual or quantification) gives a test sensitivity of about 90%.

PACS: All images should be sent to PACS.

Comments: A Nuclear Medicine staff or resident physician should be consulted to determine if additional views are indicated.

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