This edition of Journal Club is going to cover Nuclear Medicine Gastric Emptying.

There are 2 reference articles (References are given at the bottom.)
1. “Procedure Guideline for Adult Male Solid Gastric Emptying 3.0” and
2. “Scintigraphic Evaluation of Gastric Emptying”.

Gastric emptying is not a common procedure even in many busy nuclear medicine departments. Each department, has its own protocol for imaging these patients. Radiologists, frequently have to consult text works or journals for the specifics of how to read them. These 2 articles offer specific information on a background, definition and other information required to do these procedures. Also included, is information on how to interpret the findings once obtained.

Gastric emptying examinations are performed with solid meal preparation typically using egg whites or a substitute and other materials mixed with up to 1 mCi of technetium 99m sulfur colloid. Images are obtained over a specific sequence for delayed period of time up to 4 hours depending upon the protocol used by the imaging department. The time delayed information is displayed both as images and as a curve of radioactivity versus time. Figure 1, is an example of the Format which can be used by the nuclear medicine technologist to display this information.

Figure 1.

From the information in these 2 articles and some additional information, I have prepared a "cheat sheet" of the specifics on the gastric emptying. Also included are examples of abnormalities which can be diagnosed and/or evaluated from the examination.

While the imaging is always evaluated, the quantitative analysis really provides most of the information for diagnosis. Depending upon your site and imaging protocol, there are 2 ways of reporting. The first is a Gastric emptying T-1/2 and the second is retention values. There is a
controversy as to which of these is most appropriate, however many sites are now reporting retention values rather than the Gastric emptying T-1/2. This controversy is touched upon in the articles.

Cheat Sheet values:
Gastric emptying normal percentage values:
1. 30 minutes: <70% of retention (> 30% emptying) suggests abnormally fast emptying.
2. 60 minutes: <90% retention (>10% emptying) is normal; less than 30% retention (>70% emptying) suggests abnormally rapid emptying.
3. 90 minutes: <65% retention (> 35% emptying) is normal.
4. 120 minutes: <60% retention (> 40% emptying) is normal.
5. 180 minutes: <30% retention (> 70% emptying) is normal.

Gastric emptying T-1/2:
1. Solid: The normal range is 60-105 minutes
2. Liquid only: Normal range is 10-45 minutes.
3. Liquid only-children: At 60 minutes, normal range is 44-58 %.
4. Liquid only-infants: At 60 minutes, normal range is 32-64 %.

References:
Additional references: