

Using Intra-gastric Meal Distribution and Antral Contractility for Enhanced Gastric Emptying Analysis

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In this issue of the Journal of Nuclear Medicine Technology, Orthey and colleagues [1] investigate the dynamic relationship of the fundal reservoir and the antral pump in solid meal gastric physiology in 20 normal volunteer participants. Special attention was focused on Dynamic Antral Contraction Scintigraphy (DACS). Interestingly, "For the DACS imaging, each subject was allowed to choose whether an upright standing or seated position was most comfortable and then instructed to remain as still as possible in that position for the 20 minutes of DACS imaging." No further comment regarding any potential differences in upright vs supine gastric emptying were presented, despite the obvious gravitational advantage of the upright position for fundal emptying, given that authors were interested in isolated antral function.

Antral contractions may of course be directly visualized non-quantitatively via fluoroscopy with the use of non-physiologic barium suspensions or iodinated contrast agents and elastogastrography may be used for antral frequency analysis [2]. As the normal antrum contracts at about 3 cycles per minute during gastric emptying, antral frequency analysis can not be determined by routine one image per minute solid gastric emptying examinations.

On the other hand, for this current gastric emptying study, antral contractions were monitored at the relatively rapid rate of one image per 3 seconds [3-5], so acquired data time resolution far exceeded standard one image per 60 seconds acquisition rate typically employed. This rapid dynamic data collection was then frequency analyzed using Fast Fourier techniques to identify a

relatively novel physiologically determined gastric antral region-of-interest, as compared to the more usually selected arbitrary anatomic mid stomach fundal-antral border.

The onset and frequency of antral contractions could then be identified and measured, and a normal database created. Authors speculate regarding the potential clinical benefits of dynamic antral contraction analysis as compared to routine gastric emptying exams. Perhaps in the future we will collect and manage gastric emptying data in a manner similar to first-pass radionuclide angiography, with antral ejection fraction and phase analysis and reporting. We should look forward to the results of future clinical trials targeting the application of antral function analysis to outcomes in patients with dyspepsia.

References:

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