

annihilation radiation that arise whenever anti-matter equivalents capture each other. Positron-electron annihilation pairs are unique to that process, and the term positron in PET at least specifies the process that produced them.

In addition, ART is an acronym utterly familiar to any electrical engineer, signifying the algebraic reconstruction technique algorithm for image reconstruction from projection data. Thus, ART is doubly ambiguous. I think PET is a fine term and comes closer to meeting your own criteria than ART does. By the way, SPECT permits tomographic reconstruction in any orientation—not just the transaxial, as you imply. Try again Dr. Strauss!

## REFERENCE

1. Strauss HW. The ART of PET. *J Nucl Med* 1991;32:3A.

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## REPLY:

**EDITOR'S NOTE:** *A rose by any other name . . .*

(continued from page 1812)

# SELF-STUDY TEST

## Gastrointestinal Nuclear Medicine

### ANSWERS

veniently classified according to age groups. Despite the fact that 50% of symptomatic patients with Meckel's diverticula present before the age of 2 yr, it is the most frequent cause of severe lower intestinal bleeding in all pediatric age groups.

Although Meckel's diverticula usually contain ileal mucosa, ectopic tissue including gastric, duodenal or colonic mucosa, and pancreatic tissue also may be present. The prevalence of gastric mucosa is estimated to be between 30% and 50%. Because hemorrhage results from mucosal ulceration in the diverticulum or adjacent ileum caused by the secretion of hydrochloric acid and pepsin, nearly all diverticula responsible for bleeding contain ectopic gastric mucosa.

The sensitivity with which ectopic gastric mucosa is detected depends, to a large extent, on the imaging technique. Patients should be studied after a 4-hr fast, to prevent the rapid emptying of [<sup>99m</sup>Tc]pertechnetate from the stomach into the small bowel, which can obscure the field of interest. It is best to discontinue medications such as laxatives for 2–3 days, because these may cause hyperemia of the bowel with resultant increased accumulation of [<sup>99m</sup>Tc]pertechnetate.

Although it is true that there is significant thyroidal uptake of [<sup>99m</sup>Tc]pertechnetate, premedication with potassium perchlorate should not be performed. This not only will block thyroid uptake, but also will inhibit gastric uptake, in addition to that by salivary glands and choroidal plexus. It is useful to administer perchlorate after completion of the study to facilitate washout of the tracer from the thyroid gland.

A review of 226 [<sup>99m</sup>Tc]pertechnetate imaging studies with surgically proven diagnoses showed the sensitivity to be 85% and the specificity 95%. In another review there were 30 positive scans in 270 children. It was felt that the [<sup>99m</sup>Tc]pertechnetate scan should detect 80%–90% of Meckel's diverticula, whereas a negative study excludes the diagnosis in over 90% of patients.

### References

1. Boyle JT. Gastrointestinal bleeding. In: Fleischer G, Ludwig S, eds. *Textbook of pediatric emergency medicine*. Baltimore: Williams and Wilkins; 1983: 159–169.
2. Cooney DR, Duszynski DO, Camboa E, Karp MP, Jewett TC. The abdominal technetium scan (a decade of experience). *J Pediatr Surg* 1982;17:611–619.
3. Sfakianakis GN, Conway JJ. Detection of ectopic gastric mucosa in Meckel's diverticulum and in other aberrations by scintigraphy: II. Indications and methods—a 10-year experience. *J Nucl Med* 1981;22:732–738.

### ITEMS 14–18: Carbon-14-Xylose Breath Testing

ANSWERS: 14, F; 15, F; 16, F; 17, T; 18, F

King and Toskes have reviewed the ideal characteristics of a breath test for the diagnosis of bacterial overgrowth. Several factors favor the use of <sup>14</sup>C-xylose. It is primarily absorbed in the small bowel; thus, little normally reaches the colonic bacteria. There is no normal host tissue metabolism of xylose and no increase in endogenous CO<sub>2</sub> output will occur after administration of 1 g of xylose. In contrast, endogenous CO<sub>2</sub> output may increase with the bile-salt breath test. Sensitivity is greater with the xylose test because it is catabolized by Gram-negative aerobes, whereas the bile acid breath test depends on the presence of anaerobes, which may or may not be present in the overgrown flora.

King and Toskes report that many patients with malabsorption from bacterial overgrowth will have a positive xylose breath test and negative intestinal culture. These patients will show reversal of malabsorption following antibiotic therapy. Thus, the xylose breath test appears to be a more reliable functional indicator of bacterial overgrowth than the intestinal biopsy.

### Reference

1. King CE, Toskes PP. The use of breath tests in the study of malabsorption. *Clin Gastroenterol* 1983;12:591–610.

Note: For further in-depth information, please refer to the syllabus pages included at the beginning of *Nuclear Medicine Self-Study Program I: Part I*.