

Usefulness of Radionuclide Esophageal Transit Study

TO THE EDITOR: Recently, Taillefer et al. (1) studied 109 patients by the radionuclide esophageal transit study (RETS) and by esophageal manometry (as gold standard), established normal ranges using control groups, and presented data that support the accuracy of RETS as scored using global and segmental esophageal emptying times. I read their paper with great interest but have some questions and concerns.

Among the controls for RETS, did the esophageal emptying times have the unskewed Gaussian distributions needed to justify defining a normal range as mean \pm 2 s.d.? How many of this group had results beyond the normal range? The false-positive rate in normal volunteers seems important. Using essentially the same technique (2), Wald and I found that 3/16 (19%) of a normal group were abnormal by the criteria of Taillefer et al. (1) because of aberrant swallows (as we called them), a second swallow being needed to empty the esophagus. This was observed without signs of multiphasic ingestion and could not be ascribed to deglutitive inhibition. We earlier reviewed the results of several laboratories and suggested solutions to this problem (3). That substantial differences exist among laboratories with respect to this finding is an enigma.

Also, could patients' positive results have been due in part to their being older than the controls (mean ages 52 and 30 yr, respectively)? Our study revealed a significant worsening of esophageal emptying with age (2).

It is encouraging that both sensitivity and specificity were high in the patient groups of Taillefer et al. (1), since the factors cited above would have tended to increase their rates of both true- and false-positives.

Nonetheless, there are problems in the validation of RETS. Different results and conclusions emerge from different laboratories even when the techniques are similar (see ref. 4). In any case, methodology lacks standardization. (This may be inevitable.) Accuracy varies among esophageal disorders. Investigations are affected by bias in the selection of patients as to the severity of their disease (5, 6). We are still not certain of the best way to perform RETS and of its precise role.

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REPLY: We thank Dr. Klein for his interest and comments on radionuclide esophageal transit studies (RETS) and the concerns he has mentioned about RETS being appropriate and clinically relevant.

In our study (1), we have used a normal data bank obtained from RETS performed in 30 young normal volunteers. In a previous study (unpublished data) done in our institution on reproducibility of RETS in normal subjects, we have found a slight variation in the esophageal emptying times (specially for the global esophageal emptying time). However, by using normal limits that include 2 s.d. instead of one, the number of falsely "abnormal" studies was decreased to less than 5%. These normal limits have been found valuable and useful in our clinical practice which includes more than two thousand studies. This observation may partially reflect Dr. Klein's concern on "interlaboratories" variability. As with any other diagnostic imaging procedures, mainly those involving quantitative parameters, it will be absolutely essential to define a standard or uniform procedure, enlarge the number of subjects included into a normal data bank and evaluate variability of the different measures. Standardization of patient preparation, ingested activity (which may strongly affect the counting rate and thus the final results), patient positioning, duration of acquisition, type of bolus, number of regions of interest, data analysis, and interpretation criteria will be extremely important.

Doctor Klein raised the possibility that some positive results could have been due to the age of the patient, comparing older patients to younger controls. Although his group has reported a significant worsening of esophageal emptying with age (2), other studies using esophageal motility studies as a "gold standard" have shown that esophageal motility is not normally affected before the eighth decade (3-5). Furthermore, the physiologic changes observed are simply related to the level of contraction pressures without modification of peristalsis. The "older" population shows normal esophageal function unless disease is present. Our experience shows that there is no significant difference in normal patients between the third and fifth decade.

The last point we would like to discuss is the selection bias. Since all our patients were referred to the esophageal disorder clinic of our institution (the study being designed this way), they represent a "pre-selected" patient population. The prevalence of esophageal diseases is thus increased. Furthermore, in the majority of our patients with disease, the esophageal emptying times were significantly altered. Most of the quantitative data were not "borderline" or within a grey zone.

Finally, we agree with Dr. Klein that the exact clinical role of RETS is not yet very precise, but we feel that this procedure, as pointed out in our article, offers unique characteristics. Efforts should be made to use RETS more extensively in clinical practice.