Things Are Perhaps Not Quite So Simple ...

TO THE EDITOR: In the article by Trujillo et al. (*1*), the authors draw attention to the value of diethylenetriamine pentaacidic acid aerosols in ventilation scans. Several other similar ventilation techniques used to obtain multiple images of good quality are also reported in the literature (*2–5*).

The authors attribute the excellent diagnostic performance of pulmonary scintigraphy to the technique and to the specific interpretation criteria. A point not discussed in their article was patient selection, a factor of particular importance.

In our hospital, a prospective study was conducted over a 13-month period (*6*). The study's purpose was not specifically to redefine the sensitivity and specificity of pulmonary scintigraphy but to determine the value and limits of this type of examination as part of an overall strategy for diagnosing pulmonary embolism. The study involved 1819 patients, comprising 23% outpatients and 77% inpatients, with an overall mean age of 66 yr, of which 54% were female patients (mean age 69) and 46% male patients (mean age 63). Ventilation scans using phytate technetium aerosol coupled with pulmonary perfusion scans were performed on these patients and interpreted according to modified Biello criteria.

Our investigation involved an older population with a greater proportion of inpatients than in the study of Trujillo et al. The results were similar to those reported in the literature with other methods for ventilation scans (*2–5*). Thirty percent of the scans were normal or high-probability (14% and 16%, respectively). However, more detailed analysis showed that the results of the scans were closely related to the age of the patients and to the existence of underlying cardiac or lung disease, two factors that are often related. Stein (*7*) has clearly shown the influence of pre-existing cardiac or lung disease on scintigraphy results, with an increase in the proportion of nondiagnostic scans in such cases, but with no reduction in negative or positive predictive values (*7*).

Our study demonstrated an unequivocal reduction in the performance of the examination with increasing patient age. Without entering into a discussion of methods and interpretation criteria, we would note that the lung scans in our study gave a normal or high-probability of pulmonary embolism for 54% of the 90 patients under age 30, for 48% of the 286 patients aged between 30 and 50 (thus an efficiency for this group of 48/54 = 89%, compared with the under-30 yr age group), 30% of the 554 patients aged 50–70 yr (efficiency = 56%), 26% of the 627 patients aged 70–85 yr (efficiency = 48%) and only 19% of the 262 patients over age 85 (efficiency = 35% only).

This letter does not call into question the findings of Trujillo et al. which are remarkable in a great many respects. However, without taking into account such important parameters as age, the origin of the patients and the pre-existence of heart or lung disease, comparisons of the diagnostic utility of the techniques reported in different studies may be inconclusive. In fact, we feel it is probable that the very good results obtained by Trujillo et al. are at least in part attributable to patient selection. It would therefore be interesting to ascertain whether, in the population used, their technique and specific criteria provide exactly the same results according to different age groups.

REFERENCES

1. Trujillo NJ, Pratt JP, Talusani S, Quaife RA, Kumpe D, Lear JL. DTPA aerosol in ventilation/perfusion scintigraphy for diagnosing pulmonary embolism. *J Nucl Med* 1997;38:1781–1783.
2. The PIOPED investigators. Value of the ventilation/perfusion scan in acute pulmonary embolism. Results of the prospective investigation of pulmonary embolism diagnosis (PIOPED). *JAMA* 1990;263:2753–2759.
3. Bernard EJ, Nour R, Butler P, Quinn RJ. Incidence of pulmonary embolism in single segmental mismatch on lung scanning. *J Nucl Med* 1994;35:1928–1931.
4. Ramanna L, Alderson PO, Waxman AD, et al. Regional comparison of technetium-99m DTPA aerosol and radioactive gas ventilation (xenon and krypton) studies in patients with suspected pulmonary embolism. *J Nucl Med* 1986;27:1391–1396.
5. Alderson PO, Biello DR, Gottschalk A, et al. Technetium-99m-DTPA aerosol and radioactive gases compared as adjuncts to perfusion scintigraphy in patients with suspected pulmonary embolism. *Radiology* 1994;153:515–521.
6. Bosson JL, Buffaz PD, Brut A, et al. Contribution and limits of the combination of lung scan and venous duplex in the management of pulmonary embolism. *Rev Méd Interne* 1997;18:695–701.
7. Stein PD, Coleman E, Gottschalk A, Saltzman S, Terrin ML, Weg JG. Diagnostic utility of ventilation/perfusion lung scan in acute pulmonary embolism is not diminished by pre-existing cardiac or pulmonary disease. *Chest* 1991;100:604–606.

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What is a False-Positive Somatostatin Receptor Scintigraphy?

TO THE EDITOR: I read with interest the paper by Lebtahi et al. (*1*) describing incidental visualization by Octreoscan of an accessory spleen but not of the tumor itself in a patient with Zollinger-Ellison syndrome.

This study did not evaluate with in vitro assays whether the visualized accessory spleen expressed specific somatostatin receptors. However, as correctly stated by the authors, normal human spleens usually show a physiological uptake of ^{111}In-diethylenetriamine pentaacidic acid (DTPA)-octreotide in vivo; this uptake is due to the presence of specific somatostatin receptors localized in the red pulp of the spleen, as has been clearly demonstrated earlier with an in vitro autoradiography method on tissue sections (*2*). One can be almost certain, therefore, that the visualization by Octreoscan of this accessory spleen is due to the presence of specific somatostatin receptors in this tissue.

From a clinical point of view, it is understandable that the authors speak of "false-positive" somatostatin receptor scintigraphy in that they were searching for the tumor site responsible for Zollinger-Ellison syndrome in this patient but were only able to detect a "normal" organ, namely the accessory spleen. From a biological point of view, however, the visualization of the somatostatin receptor-positive accessory spleen is not a false-positive result since it is due to the presence of specific somatostatin receptors in this tissue. The same is also true for other somatostatin-receptor-expressing normal tissues such as the pituitary, and possibly the thyroid (*3*), which should not, biologically speaking, be considered false-positive when visualized on scans. Truly false-positive Octreoscans do exist however; these are hot spots that are not related to the presence of somatostatin-receptor-expressing tissue. For example, a hot spot was reportedly found in a tissue lacking somatostatin receptors but characterized by a local production of antibodies raised against octreotide as a consequence of multiple local octreotide injections (*4*). By calling the visualization of somatostatin-receptor-expressing normal organs false-positive, even those ectopically localized, one cannot distinguish such cases from the truly false-positive cases mentioned above. It may be worth recommending to use the term "false-positive" more restrictively to describe only those receptor scintigraphic findings with Octreoscan that are evidently not caused by the presence of somatostatin receptors.

Accessory spleens are common and have been encountered singly or multiply in one-fifth to one-third of all postmortem examinations. They are usually small spherical structures that are histologically and functionally identical to the normal spleen (*5*). In patients with splenectomy, in particular splenectomy performed after traumatic injury of the spleen, the