10.38 %/hr. The scintigraphic data were also calculated for the other patients with carcinoma and degenerative goiter. Statistical analysis revealed that there was no significant difference in the washout rate for the normal thyroid tissue and the nodules for any of the groups. The microfollicular and oxyphilic adenomas showed statistically significantly higher N/T ratios for early and late scans.

It is widely reported and accepted in the literature that the retention of cationic complexes is mainly related to subcellular membrane potentials (*4,5*).

Based on this data, we concluded that the sestamibi and tetrofosmin positive scan for thyroid adenomas is due to a higher tracer uptake in the early phase of scintigraphy and subsequent retention in the nodules up to the late scan.

The visual inspection results could be confirmed semiquantitatively by calculating N/T ratios.

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Regional Stability of Cerebral Blood Flow

TO THE EDITOR: We read with interest the article by Deutsch et al. (*1*) about the replicability, in normal subjects, of resting states rCBF measured by ^{99m}Tc-HMPAO brain SPECT scans. In their work, a semiautomated computer ROI method is used, in which 12 ROIs are drawn on a cortical annulus from a transaxial slice. This procedure is performed on three different transaxial slices, located 3.5 cm, 5.5 cm and 7.5 cm above the canthomeatal line. Using this methodology, optimal reproducibility of ROI localization for the purpose of interstudy comparison is ensured.

In clinical practice, however, the interpretation of brain SPECT scans is not necessarily based on such a procedure. One usually starts with analyzing visually the cortical tracer distribution to detect any regional hypoactivity. This may be further refined by a quantitative analysis, whereby the activity in a ROI drawn around the abnormality is compared to the activity in a symmetrically located ROI. It would be interesting to evaluate the replicability of ^{99m}Tc-HMPAO brain SPECT studies using such an approach.

We performed ^{99m}Tc-HMPAO brain SPECT studies on ten young, normal volunteers aged 20–30 yr using a single-head gamma camera (*2*). Images were obtained 15 min after intravenous administration of about 550 MBq (min.: 498 MBq; max.: 618 MBq) ^{99m}Tc-HMPAO, prepared according to the manufacturer's instructions and using freshly eluted ^{99m}Tc.

For each volunteer, the SPECT study was repeated after a 14-day interval under the same conditions, with the head placed in the same position. Using the filtered backprojection method, reconstruction generated coronal, transaxial and sagittal slices 2 pixels thick. To determine the most important asymmetry, 23-pixel circular ROIs (about 9 cm^2) were drawn around any hypoactive area and its contralateral.

The most important right-to-left asymmetry observed in the first studies was between 5.4% and 16.5% (mean 10.4%, s.d. 3.4%). In the repeat studies, the asymmetry was between 6.1% and 15.9% (mean 9.9%, s.d. 3.3%).

In only two of the ten volunteers was the most important hypoactivity located in the same area in the first and second brain SPECT images. In three volunteers, it was located elsewhere in the same hemisphere, while it was located on the opposite hemisphere in the five other volunteers.

Because of these topographical changes, a quantitative evaluation of replicability seems hazardous. For example, the first SPECT image of one volunteer showed a 16.5% hypoactivity located in the left temporal area, while the second SPECT image showed an 11.4% right parietal lobe hypoactivity.

We consider that, with our setting, important variability in ^{99m}Tc-HMPAO regional distribution is frequently observed. When comparing two ^{99m}Tc-HMPAO studies performed in the same patient, a change less than 18% should not be considered abnormal.

In their work, Deutsch et al. (*1*) concluded that they had "good within-subject replicability." However, it is obvious from the standard deviations presented in their Table 1 that differences between Scan 1 and Scan 2 of more than 20% have been observed in some cortical areas of some volunteers.

Our data are in agreement with those of Deutsch et al. (*1*); we differ only in the interpretation of the results.

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REPLY: In response to Tondeur et al.'s letter, above, it is misleading to say that our respective studies show the same results but that we "differ only in the interpretation." The results cannot even be rightfully compared because the two studies (where they overlap at all) examined variability in two completely different ways. We looked at changes in identical, carefully defined regions of interest (ROIs); Tondeur et al. (*1*) defined their ROIs in terms of any area that showed a large asymmetry with the homologous side. Their ROIs were different in each study; ours were the same. It is not appropriate to point to some of our values for the difference between Scan 1 and Scan 2 and say that we also had 20% variability in some ROIs. Where such differences exist in our data, they clearly represent an extreme; that is, they represent values at 2 s.d. or greater extreme—approximately 4% of the population estimate. Tondeur et al. claim this kind of variability to be typical. Table 1 in our article shows that the mean variability was in fact 2.8% (range 0%–7.8%) for our 36 cortical ROIs (within-subject Scan 1:Scan 2 percentage difference for each ROI) (*2*).

Tondeur et al.'s (*1*) approach of looking for maximum differences or asymmetries in each scan may, as they say, be of some interest in its implication for methods of clinical interpretation. It reinforces the fact that such methods do not constitute good clinical practice, not that these methods are even normally used by most clinicians. To reduce the interpretation of a brain SPECT scan to merely observing for areas of hypoactivity is a vast oversimplification of the proper approach to clinical brain SPECT scan diagnosis.