of the curves of Fig. 1. However, since $1/P \cdot dR/dt$ is constant and the plasma curve (P) is exponential, the slope of the renal curve (dR/dt) ought to be an exponential function. The calculation of a mean slope seems to us hazardous.

The second assumption is based on calculations, with and without background correction, in 20 patients with GFR ranging from 9 to 110 ml/min.

Our results are not in agreement with their findings. We have studied 15 renal sets, with separate GFR ranging from 10 to 68 ml/min. For all these patients, different amounts of background, ranging from 0 to 2 background units, were subtracted from the renal curves.

In Fig. 1 we have represented the percentage variations of the separate clearances as a function of the amount of background subtraction. For the 15 patients, the means ± 1 s.d. of the percentage of the variation are shown. It appears that for a wide range of background correction (0.75 to 1.25), slight errors in determining the background do not significantly influence the value of the clearance. For background corrections between 0 and 1, however, differences of as much as 100% can be observed in clearance values.

Since there is no predictable relation between the separate clearance value and the influence of the background curve, the absolute variations of clearance can be important. In one case, for instance, the separate clearance with background correction of 1.0 is 55 ml/min; without correction, it becomes 29 ml/min.

Other authors (3,4) have also found significant variations of the background curve.

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Reply

It is true that, in the uptake phase of the Tc-99m DTPA renogram, the slope of the renal curve ought to be an exponential function. For practical purposes, however, it is linear between about 2 and 4 min after the injection. Also, the background, measured between the kidneys or over one cerebral hemisphere, is for practical purposes constant although careful analysis reveals, not surprisingly, that it does show a small exponential fall. This fall can be disregarded in normal subjects, because it is small compared to the rise of the renal curve when the tracer is given as a slow (30 sec) intravenous injection. Therefore, from about 2 to about 4 min after the injection, $dQ/dt = GFR \cdot P$, where Q is the activity in the kidney area and P the mean plasma concentration.

The letter from A. Piepsz et al. does not provide enough data for us to discuss their arguments in detail. We agree in principle that the subtraction of extrarenal activity combined with blood background correction is right.

The correct estimate of extrarenal activity, however, is difficult to obtain. None of us knows the exact extrarenal activity to be subtracted. We share this problem with those using [^{1st}I] Hippuran renography. It might not be wise to use an "area of interest" corresponding to the perirenal region. We feel that Piepsz et al. are on shaky ground in considering that a nephrectomy site truly represents the renal background, since this area is abundantly vascularized for a long time after nephrectomy. Furthermore, two identically located perirenal areas are difficult to produce.

We have demonstrated in our paper that the effect of subtraction of the slope of a curve corresponding to the abdominal aorta on the calculated single-kidney function (SKF) is not great in terms of ml/min GFR. We have also showed that the effect was more pronounced—particularly in patients with low total GFR or low GFR for one kidney if SKF was expressed in terms of percent of total GFR.

Since we submitted our paper we have carried out 100 additional patient studies. In these patients we have routinely subtracted the slope of the background curve from an "area of interest" between the kidneys.

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Ultrasound as a Complementary Procedure to Radionuclide Thyroid Scanning

We read with interest the article by A. D. and R. C. Sanders in the March issue of the Journal (1), and agree implicitly that B-mode ultrasonic examination is a useful adjunctive test to the radionuclide thyroid scan (2). Such a test may be far less than useful, however, when misinterpreted-as in the case of the thyroid adenoma illustrated in Fig. 15 of that article. The authors demonstrated an example of a thyroid nodule that occupied the lower pole of the right lobe of the thyroid and was shown to be hypofunctioning. The authors stated that the lesion initially appeared sonolucent and occupied the posterior aspect of the right lobe. They did make the point, however, that it was atypical in that it did not exhibit the posterior enhancement of echoes characteristic of cystic lesions. By increasing the gain, they were able to identify internal echoes, and therefore concluded that the lesion was solid.

The lesion illustrated is in fact solid but is located immediately anterior to the proposed nodule. It occupies much of the bulk of the lower pole of the right lobe, therefore appearing quite "cool" on the technetium scan, and it appears to extend into the isthmus. If this were to be normal thyroid tissue displaced forward, as implied by the authors, it is unlikely that this region would appear "cool" on the anterior scan.

Two points should be made. If the presence of a solitary nodule is confirmed by the radionuclide scan, the nodule