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REPLY: The letter of Ginjaume and associates, "Measurement of Glomerular Filtration Rate Using Technetium-99m DTPA," is basically concerned with two issues: (a) Can the glomerular filtration rate (GFR) be predicted by knowing the percent of administered technetium-99m diethylenetriaminepentaacetic acid ([^{99m}Tc]DTPA) accumulating within the kidneys at a specific time after injection; and (b) What effect does depth correction have on the accuracy of GFR measurement, and how should renal depth be determined.

Lee et al. (*1*) conclusively demonstrated the relationship of renal [^{99m}Tc]DTPA uptake, expressed as a percentage of injected dose, with GFR as determined by chromium-51 ethylenediaminetetraacetic acid ([^{51}Cr]EDTA) clearance; their correlation (r) was 0.9634 with the standard error being 8 ml/min. My technique (*2*) similarly showed the relationship of [^{99m}Tc]DTPA uptake, also expressed as a percentage of injected dose, with GFR as measured by creatinine clearance; the correlation (r) was 0.97, and the standard error was 7.0 ml/min. Shore et al. (*3*) basically reproduced these results in a pediatric population where the correlation (r) between renal tracer uptake and GFR as measured by clearance of [^{99m}Tc]DTPA was 0.935 with a mean residual of 7.1 ml/min. Thomas et al. (*4*) have used a modification of this technique to compute a correlation (r) of 0.88 when comparing scintigraphically determined GFR with plasma clearance of [^{99m}Tc]DTPA in rats. A prospective analysis of my formula in two different patient populations has shown a correlation (r) between predicted and actual GFR (creatinine clearance) to be 0.91 (*5*) and 0.99 (*6, 7*). The former value was obtained by Long (*5*) using glucoheptonate.

Depth correction has been used by many of the authors. Lee (*1*) measured renal depth from a lateral scintigram, Shore (*3*) measured it by ultrasound, while Long (*5*) and I (*2*) used the formulae of Tønneson et al. (*8*) for renal depth estimation. Depth correction improves the accuracy of this test, as I discussed in my original publication (*9*); the correlation (r) between percent renal uptake of [^{99m}Tc]DTPA and GFR (creatinine clearance) dropped to 0.878, and the standard error increased to 13.6 ml/min., when the depth correction was omitted. Tønneson's method of estimating renal depth from a patient's height and weight, while not perfect, has been used successfully by Schlegel et al. (*10, 11*) for many years when estimating effective renal plasma flow (ERPF) and GFR, and as used in the series that I originally reported (*9*) (and not cited by Ginjaume et al.) was shown to improve test accuracy.

I cannot explain the poor results of Ginjaume when correlating percent renal [^{99m}Tc]DTPA uptake with GFR. Their correlation (r) of 0.35 would suggest that there is little, if any, meaningful relationship between these two variables. It is too bad that they did not mention what their results were when omitting depth correction or when using values obtained from either lateral scintigrams or ultrasound. However, at least six groups of investigators (*1-5, 11*) have independently shown the relationship of percent renal [^{99m}Tc]DTPA uptake and GFR to be valid. Furthermore, renal depth correction using the formula of Tønneson has been used successfully by three of these investigators.(*2, 5, 11*) Quantitative renography is a demanding technique. Some common sources for error include: (a) too large a dose of tracer resulting in inaccurate pre-injection syringe count determinations; and (b) inaccurate transmission of syringe count information from camera to computer resulting in a significant loss of data. No information is supplied by Ginjaume regarding dose or computer-camera quality control.

I am concerned that the first paragraph in the letter implies that I have used some sort of "calibration curve" which was "derived from data on patients who had undergone [^{99m}Tc]DTPA renography and had GFR measured by one of the established techniques . . .". Perhaps this was used by Ginjaume to compute GFR but certainly is not part of my method. Contrary to the author's final sentence in the first paragraph, I have never advocated or used a "requirement" of "counting . . . a [^{99m}Tc]DTPA standard made up from the vial used for injection." The procedure which I have reported is rapidly performed, accurate, and highly reproducible. It does yield clinically useful information and allows one to swiftly perform split renal function testing with the final results in absolute values (i.e., ml/min) of GFR.

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