

The results of this small retrospective study demonstrated that of 18 patients with adenocarcinoma of the colon who had brain scans for various reasons, 4 had positive scans along with positive histologic or clinical evidence or both to support the diagnosis of metastasis. None of the group with negative scans had histories strongly suggesting false-negative brain scans. Although there is certainly not enough histologic evidence to refute the contention of Brooks, et al we believe that these data shed significant doubt on the statement that negative brain scans are the

rule rather than the exception with cerebral metastasis from colonic adenocarcinoma.

MICHAEL J. WEINER
C. DAVID TEATES
University of Virginia
Charlottesville, Virginia

REFERENCE

1. BROOKS WH, MORTARA RH, PRESTON D: The clinical limitations of brain scanning in metastatic disease. *J Nucl Med* 15: 620-621, 1974

THE AUTHORS' REPLY

The observation that no positive brain scans were found in histologically proven colonic adenocarcinoma was indeed an unexpected finding that prompted our earlier communication. In spite of the lack of support from the University of Virginia, albeit the lack of histology to confirm negative or positive scans, the lesson in clinical practice remains valid. A negative brain scan in patients with suspected metastatic cancer does not conclusively rule out a secondary brain tumor. In our practice, the lack of

a positive scan has been "the rule rather than the exception" in those patients with adenocarcinoma of the colon. Therefore, we would not consider a patient with colon carcinoma and cerebral manifestations suggesting metastatic disease "tumor-free" without additional neurodiagnostic investigations.

WILLIAM H. BROOKS
RICHARD H. MORTARA
University of Kentucky Medical Center
Lexington, Kentucky

BLOOD VOLUME MEASUREMENTS

I read with interest and some concern an article by Hurley (1) in which the author describes the technique he used for measuring blood volume. This technique (as described on page 47) is confusing. The author does not seem to have limited himself to a uniform method. I think he used dual tracers in some cases and in others a single tracer, with the assumption of a constant F_{cell} ratio. Moreover, he states that he ignored zero-time extrapolation and took a single 10-15-min postinjection sample as representative of an adequate equilibrated and mixed dilution sample. It might be valid in normal humans, but I am sure that many readers will assume that such a technique is applicable to the patient who needs a volume measurement. It is disturbing to think that such an assumption might be made. In our experience, blood volume measurements performed in this manner are not valid and should be condemned. Equilibration time varies in the pathologic condition and two tracers (labeled albumin and labeled red cells) may have totally different equilibration or mixing times (2,3).

What is normal, and of what significance is a blood volume measurement? Many authors have come up with different formulas and values depending on the population, habitat, and even culture of

a people. Fujita (4), utilizing a dual-tracer measuring technique, established a different set of values based on a normal Japanese population. Standards and values are all relative and are to be used as a guide for replacement therapy, taking into account the physiologic balance of the particular individual. I certainly agree that body surface is the most reliable parameter and that the Hidalgo, Nadler, and Bloch (5) values serve as good guides.

We are presently reviewing 2,000 cases in which blood volume measurements were performed by a dual-tracer technique and our results confirm our earlier observations based on a study comprising 200 patients. The measurements obtained with a single tracer were compared with those obtained when each component was measured separately with its appropriate tracer. The results are valid and comparable provided the multiple sampling technique is rigidly followed and calculations take into account the F_{cell} ratio. Calculations and sources of error are clearly described in the references cited.

One can certainly amuse oneself with all kinds of mathematical exercises to establish a normal value, but how and where does this value apply in actual practice? The reliability of values obtained by the indirect measurement of blood volume depends on