[Abstract]. *J Nucl Med* 1990;31:839.
13. Gagnon A, Taillefer R, Bavaria G, Léveillé J. Fast labeling of technetrium-99m-sestamibi with microwave oven heating. *J Nucl Med Technol* 1991;19:90–93.
14. Use of radiopharmaceuticals, generators, and reagent kits for imaging and localization studies. Code of Federal Regulations—Energy, Title 10, Part 35.200.
15. Authorization to prepare radiopharmaceutical reagent kits and elute radiopharmaceutical generators; Use of radiopharmaceuticals for therapy. *Federal Register* 1990;55:34513–34518.

EDITOR'S NOTE:

Please use caution when repeating this study. **Due to the manufacturer's modification of the thickness of the glass used in the vials, the method herein described may result in an explosion when the vials are heated in the microwave as directed. Data on this phenomenon has just been received and will be published as a Letter to the Editor in an upcoming issue of the *Journal*.**

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Selected manuscripts from the issues of *The Journal of Nuclear Medicine* published 15 and 30 years ago.
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Epilogue on Extradural Hematoma

Peter M. Ronai, MD, PhD

This issue contains three contributions dealing with the appearance of epidural hematoma on cerebral radionuclide studies. Each paper makes its point clearly and concisely, and at first glance this subject may seem a pedestrian topic for editorial comment. Nevertheless, a number of points are worthy of discussion.

The vast majority of extradural hematomas are indistinguishable from subdural hematomas by radionuclide imaging. The sign of separation of the superior saggital sinus from the skull, described by Buozas et al. and by Lin in this issue, appears to be the only means of distinguishing the two types of lesions using radionuclide studies. Despite its rarity, this sign is therefore an extremely useful one. The rim sign, unfortunately, provides no basis for differentiation.

Lin draws attention to an interesting characteristic of extradural hematomas at the vertex: the primarily venous nature of the hemorrhage. In this respect, extradural hematomas at the vertex appear to constitute a distinct entity since, in sites other than the vertex, they usually are caused by arterial hemorrhage due to laceration of a meningeal artery.

The paper by Zilkha and Irwin raises an important problem: the relative roles of brain scans and contrast angiograms in extradural (or subdural) hematomas. The gross displacement of cerebral vasculature from the inner table of the skull on the dynamic study in the case illustrated by Zilkha and Irwin is diagnostic of a large extracerebral collection. The need for a contrast angiogram in the face of such an unequally positive radionuclide study, together with a fracture on the skull radiograph, must be questioned. It seems appropriate therefore to develop a rational policy concerning the roles of radionuclide and contrast studies in the diagnosis of extradural and subdural hematomas. The following is such a rational approach (although it is not the only rational approach):

- When the clinical problem is acute, a contrast angiogram is more appropriate than a radionuclide study, and in emergency situations immediate surgery based solely on clinical diagnosis may be necessary. The contrast angiogram is highly sensitive and highly specific.
- When the clinical problem is not acute, a radionuclide study is indicated. The radionuclide static images are sensitive but nonspecific. However, if the radionuclide dynamic images show displacement of the cerebral vasculature away from the inner table of the skull, the radionuclide study is not only sensitive but specific for an extracerebral collection, and a contrast angiogram is unnecessary.
- In the absence of this sign, abnormal static images usually indicate the need for contrast angiography to increase diagnostic specificity. If the radionuclide study is entirely normal, an extracerebral collection is exceedingly unlikely. In a review of the literature on extradural hematoma, Cowan and Maynard found that only 2 of 19 patients with proven extradural hematomas had negative scans. In a large study by Brown et al. of 5,835 dynamic, static scintigrams, no patients with normal dynamic and static images were subsequently found to have a subdural hematoma.

Accordingly, normal radionuclide studies virtually exclude an extracerebral collection and patients should be followed clinically without further expensive or invasive procedures. If the clinical picture remains suspicious for an extracerebral collection, a follow-up radionuclide scan is indicated. If the clinical picture becomes more acute, a contrast angiogram should be performed. ■