

EPIDURAL HEMATOMA WITH DECREASED RADIONUCLIDE UPTAKE

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*A unique scintigraphic finding in a case of epidural hematoma was an area of decreased pertechnetate uptake in the area of the angiographically documented lesion. The avascularity of the acute lesion and pressure effects on surrounding vessels may account for this appearance.*

Following head trauma, brain scintigraphy may be of great assistance in the diagnosis of cerebral contusions and intracerebral and subdural hematomas (1). In the event of rapidly progressive post-traumatic brain damage, roentgenographic cerebral angiography is the procedure of choice to demonstrate a lesion amenable to surgical intervention (2). In the case of epidural hematoma reported below, a rectilinear brain scintiscan was performed on admission, yielding a finding heretofore undescribed.

CASE REPORT

BC, a 54-year-old white man, was admitted to the Cincinnati Veteran's Administration Hospital (#268059451), October 1, 1972. The patient had fallen 2 days prior to admission but was never unconscious, did not complain of a headache, and showed no evidence of limb weakness. He had a past history of heavy alcoholic intake. However, within 12 hr of the fall, the patient was unable to move his left side and was brought to the hospital 36 hr later. He was found to be oriented to person but not to time and place. There was no external evidence of head trauma. The eyes were deviated to the right with a left homonymous hemianopsia but with pupils equal and reacting sluggishly to light. The ocular fundi were normal. The patient had a gross left facial palsy with the tongue deviated to the left, flaccid paralysis of the left arm and leg, and complete denial of this deficit. The left plantar response was upgoing and there was left-sided hyper-reflexia. The

skull films were normal. A brain scintiscan employing 15 mCi  $^{99m}\text{TcO}_4^-$  showed an area of diminished activity in the right frontoparietal area visible on anterior and posterior views (Fig. 1). Within 24 hr, the patient underwent right carotid arteriography which showed extravasation from a cortical branch of the right middle meningeal artery (Fig. 2).

Craniotomy performed immediately following arteriography revealed an extensive epidural hematoma extending over the right frontal, temporal, parietal, and occipital regions, displacing the dura 3.5–4 cm away from the wall of the skull at its deepest point. There were two areas where blood was seen oozing from the middle meningeal artery. No cysts or tumors

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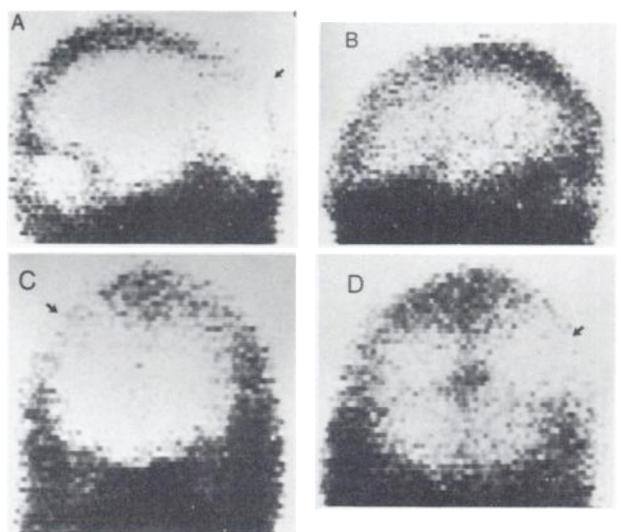
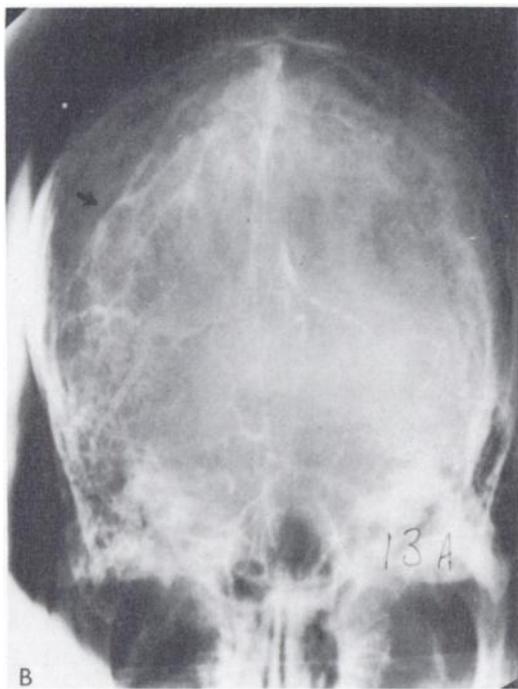


FIG. 1. Rectilinear pertechnetate scintiscans with decreased uptake in area of epidural hematoma (arrows) 2 days after head trauma. (A) Right lateral, (B) left lateral, (C) anterior, and (D) posterior.

were noted at the time of operation. Following evacuation of the epidural hematoma, the patient had complete recovery of neurologic function.

#### DISCUSSION

The scintiscans of this patient are unique in showing a large area of decreased uptake in the area of



**FIG. 2.** (A) Extravasation (short straight arrow) from branch of middle meningeal artery (curved arrow). (B) Avascular epidural hematoma compressing brain (arrow).

a proven epidural hematoma. Of 18 cases of epidural hematoma where scintigraphy was performed, found in a literature review (1,3-11), all had an area of increased uptake in the familiar peripheral crescentic configuration identical to that of subdural hematoma. The mechanism of this increased uptake is believed to relate to accumulation of the radiopharmaceutical in the membranes of the hematoma (10), although two epidural hematomas were seen by scintigraphy as early as two days after head trauma (5).

Areas of reduced activity in brain scintigraphy have been reported previously with porencephalic and arachnoid cysts and intracranial teratoma, none of which our patient had (12). The epidural hematoma in our study, which was also visualized 2 days after head trauma, was avascular, as shown angiographically. This absent vascularity, plus possible compression of surrounding vasculature, would explain the decreased uptake of  $^{99m}\text{Tc}$ -pertechnetate noted in Fig. 1 (A, C, and D) at a time prior to extensive membrane formation.

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