

SCAN VISUALIZATION OF MYCOTIC ANEURYSM OF A

BRANCH OF RIGHT MIDDLE CEREBRAL ARTERY

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Although many studies of radionuclide angiography report dynamic flow studies with a gamma camera (1-3), our previous experience with heart scanning (4) had shown the feasibility of visualizing

dynamic processes with rectilinear scans. Therefore we began studying children with suspected arteriovenous malformations within the skull by means of rectilinear brain scans. This case report illustrates the successful visualization of such a lesion by ^{99m}Tc scan when all other diagnostic tests were equivocal.

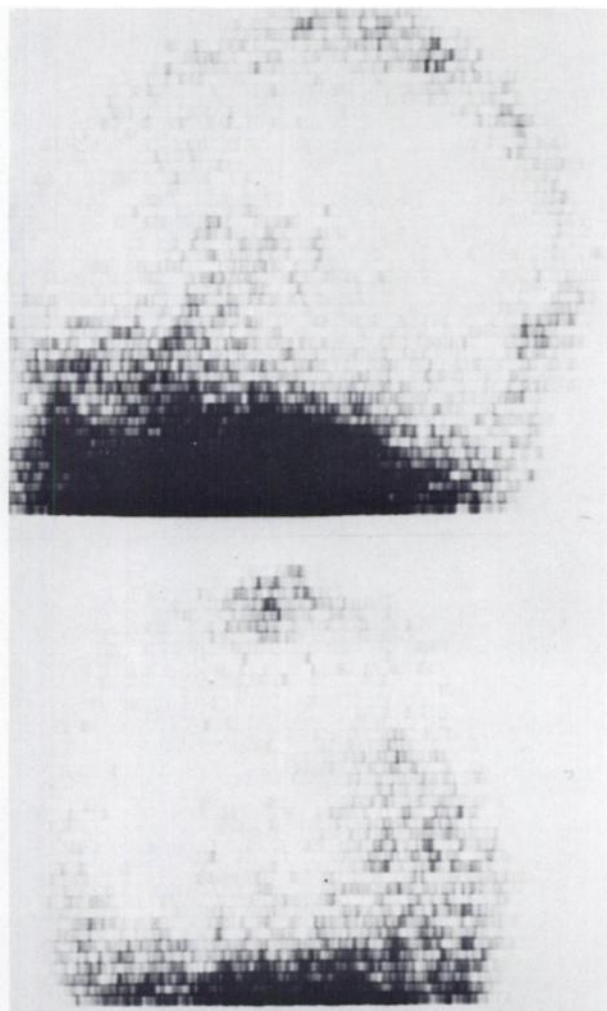


FIG. 1. ^{99m}Tc brain scan showing abnormal focus of uptake located superficially in front-parietal region of right hemisphere, interpreted as vascular in nature because it decreased in prominence on repeated scan after 3-hr incubation. At autopsy, mycotic aneurysm in branch of right middle cerebral artery was found. Above, right lateral view; below, anterior view.

METHODS

Technetium-99m-pertechnetate was eluted from a sterile ^{99}Mo generator and injected intravenously immediately after assay. The patient received 100 mg of sodium perchlorate in cherry syrup before the injection and waited 30 min between injection and scanning. The scans were performed with an Ohio-Nuclear Model 54F scanner, equipped with 5-in. crystals and a 93-hole collimator with 1/2-in. resolution. Repeat scans were obtained after about 3 hr and were compared with the initial scans for changes in the pattern and concentration of isotope distribution.

CASE REPORT

Patient SP was first seen at age 13 with complaints of chills, vomiting, and difficulty in seeing. Physical examination did not reveal any significant positive or localizing neurological signs although there was some nuchal rigidity. Lumbar punctures produced CSF with 1,000 WBC/mm³ with 72% polymorphonuclear cells supporting the clinical impression of meningitis. Massive penicillin therapy (2,000,000 U every 4 hr) was begun. There was some improvement in the patient's nuchal rigidity but a spiking fever persisted. On the tenth hospital day ^{99m}Tc brain scans were performed and interpreted as showing a vascular lesion superficially on the right side (Fig. 1). A Janeway lesion was detected on the girl's right thumb on the day after the brain scans were performed. Further lesions suggestive of subacute bacterial en-

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docarditis appeared although all of many blood cultures were negative. Antibacterial treatment was broadened to include methicillin and streptomycin, and the patient's spiking fever gradually abated. However, after slow and progressive clinical improvement for 1 month, she was found lying on the floor of her room unconscious and unresponsive. Despite vigorous attempts at treatment, she died the following day. At autopsy, active subacute bacterial endocarditis and a ruptured mycotic aneurysm of a branch of the right middle cerebral artery were found with acute subarachnoid and intracerebral hemorrhage. The lesion causing death was in the exact location visualized on brain scans 1 month previously.

DISCUSSION

Previous workers have reported the scintigraphic visualization of arteriovenous malformations (5,6) but only when they were at least 3×3 cm in size (5). Size rather than location of the lesions has been claimed to be the limiting factor in their detection (5). In the present case the lesion was only about 1×3 cm but its visualization was probably enhanced by the inflammatory changes around it because of its etiology. When the 187-hole, fine-focus collimator is used with the Ohio-Nuclear scanner, lesions as small as 1.5×1.5 cm have been visualized successfully on brain scans.

Reports of sequential cinephotos with the gamma camera (1-3) have not specified the minimum size of lesions visualized, but the published figures suggest that small lesions would not be seen. The present case, one of six similar cases studied in this

laboratory, suggests that the rectilinear scanner can be very useful for detecting CNS vascular lesions and that rapid-imaging devices are not essential for such diagnostic studies.

SUMMARY

A child with a mycotic aneurysm of a branch of the middle cerebral artery, diagnosed only by ^{99m}Tc brain scans, is presented and discussed with respect to visualization of arteriovenous lesions by the rectilinear scanner. Vascular malformations and vascular lesions of the brain can be well visualized by scan alone.

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