

### XIII. Brain

#### Brain Scanning with $^{99m}\text{Tc}$ -Pertechnetate in 200 Patients with Cerebrovascular Accidents

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This paper is to present the findings of 200 brain scannings based on our results. The patients in our study included 56 with cerebrovascular accidents (110 scans), 40 with miscellaneous lesions affecting central nervous system, 45 with brain tumors, and 5 with neurosurgical diseases of various kinds. Also, a possibility of clinical evaluation of the patients with this diagnostic procedure was discussed in this report as the main focus of interest.

##### (1) Method

Brain scan was performed with  $^{99m}\text{Tc}$  pertechnetate utilizing the Aloka JSS-103B (equipped with NaI (TI)  $3 \times 2\phi$  crystal) with 37-hole collimator. The focus was 10 cm. deep, with dot factor  $1/8-1/4$ , scan time 0.2-0.3 sec., scan speed 50-70 cm./min., and density 7.

(2) The frequency of positive scans was as follows: in cerebral hemorrhage 83% and in cerebral thrombosis 51%. On the other hand, brain scan findings in various pathological conditions were studied, which included transient ischemic attack, arterio-venous malformation, subdural hematoma, S.L.E. vasculitis, and aortic arch syndrome.

(3) We found that the frequency of positive cases differs according to the site of cerebral lesions, particularly in cerebral thrombosis and hemorrhage. In the former cases, the anterior cerebral artery was af-

fected in 1/3 of the cases, the middle cerebral artery 9/16, the posterior cerebral artery and the vertebro-basal artery 0/2 and 0/3, respectively.

(4) In cerebral thrombosis, positive scans were obtained in 45% of the cases, in 55% with E.E.G., and in 36% with angiography. It was postulated that the severity of consciousness disturbance and focal symptoms closely correlate with patterns of positive scan findings, which might offer both reliable and useful diagnostic tool in evaluating the prognosis of diseases.

(5) The possibility of occurrence of positive scans in cerebro-vascular accidents are largely dependent upon the time at which the scan is performed. The positive scans resulted in 20% of C.V.A. cases within 2 weeks after the onset, in 57% in between 2 and 4 weeks, and in 50% in between 4 weeks and 3 months.

In C.V.A. cases, positive scans resulted in 20% within 2 weeks after the onset, in 57% in between 2 and 4 weeks, and in 50% in between 4 weeks and 3 months, while in thrombotic cases as scanned in 3 months or later, no positive scan was obtained.

(6) Also, positive scan resulted in 32 out of 40 brain tumor cases, and in 4 out of 5 miscellaneous neurosurgical brain lesions. Except in metastatic brain lesions, pathological diagnosis was rarely possible from scan findings.