

VIII. Brain and Nervous System

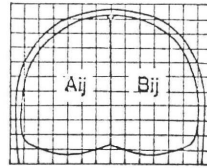
Diagnostic Studies on Brain Scintigrams (Bilateral Collation Method)

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We have performed brain scans on more than two hundred patients as a screening test for the past two years. In reading the scintigram, it was required to get the objective view of the brain scintigram. Because we had met much suspectable appearances in the cases of cerebrovascular accidents and astrocytomas etc. In this purpose, we had tried the method to emphasize and smooth the positive areas of brain scintigrams by using a radioisotope data processing system including a minicomputer. The pictures by this display method were better than the original appearances, but the lesions could not be always clarified. In the view of the symmetrical observation of both hemispheres, the scintigrams were divided in 6 mm × 6 mm sections and the bilateral

BRAIN SCANNING BILATERAL COLLATION METHOD



$$A_{ij} : a_{ij} \pm \sqrt{a_{ij}}$$

$$B_{ij} : b_{ij} \pm \sqrt{b_{ij}}$$

$$C_{ij} : a_{ij} - b_{ij} \pm \sqrt{a_{ij} + b_{ij}}$$

$$D_{ij} : b_{ij} - a_{ij} \pm \sqrt{a_{ij} + b_{ij}}$$

collation method was applied as follow:
Using this newly developed procedure, we could detect the unidentified lesion in the original picture as an accurately positive area, objectively.

Limitation in Differential Diagnosis of Intracranial Lesions by the Simple Brain Scan

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The value of the simple brain scan was discussed in differentiating intracranial lesions without additional clinical informations. In reviewing a scan the following factors should be considered: a) the number of lesions, b) the location of the lesion, c) size of abnormal uptake, d) density, e) margins and shape of the abnormal uptake, f) temporal factors.

1) number of lesions: The presence of two or more areas of abnormal uptake must be taken as a sign of metastases or brain ab-

scences.

2) The location of the lesion: This is one of the most valuable aspects of analysis of the positive scan. The major categories of uptake, namely brain tumors and infarcts, were separated in 52 percent by some knowledge of neuroanatomy and neuropathology. The analysis of abnormal uptake in a given location was narrowly limited by knowing the relative frequency of tumor types of different locations.