M. Brain and Nervous System

Diagnostic Evaluation of the Delayed Scintigraphy for Brain Tumor

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Positive scintigraphical findings were obtained from 85% of 303 cases of brain tumors which were verified histologically in these past ten years.

Positive findings were obtained from 83% of glial tumor group, and 89% of non-glial tumor group. There was no difference in the scintigraphical accuracy according to the site of tumors.

Acoustic tumors and astrocytomas had low scintigraphical accuracy, the former showed positive rate of 50%, and the latter 36%.

The scintigraphical diagnosis of acoustic tumor was, however, improved by taking of the delayed scintigraphy. This was confirmed with consideration of the patterns from different RI-uptake curves showed by each kind of tumors.

On the other hand, diagnosis of the astrocytoma was not improved even with the delayed scintigraphy.

The scintigraphical accuracy was related to the histological type of the tumor rather than to the size of the tumor.

Significance of the Brain Scan in the Aged, Special Reference with Brain Tumor

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Brain tumor in the aged was investigated with all 1321 brain scans and the interesting findings were obtained in the aged patients. The subjects performed during 3 years at our department and 1938 cases autopsied during 15 years at this hospital were examined.

(A) Silent tumor:
Sixty cases of the brain tumor were confirmed out of the 1321 brain scans. Seven cases of brain tumor were clinically oligosymptomatic and the presence of brain tumor was not suspected until brain scanning. The sizes of the brain tumors on
the scan were from $2 \times 2$ cm to $7 \times 7$ cm.

(B) Brain tumor with clinical diagnosis of CVD:

Thirty six cases of brain tumor were assessed from 1938 autopsied cases at department of pathology in this hospital during December '60 to June '75. Before June '72, there were 18 cases of brain tumor and the physician never suspected or proved the presence of brain tumor. After the hospital was enlarged in its scale and equipped with modern facility at June '72, there were 18 cases of brain tumor proven by autopsy. The percent of correct clinical diagnosis for brain tumor was elevated up to 67%. The reason was attributed to the introduction of various new examination methods including brain scan. Brain scan was done on 13 out of 18 autopsied brain tumor cases. Five and a half cases (42%) among 13 patients were referred to our department with suspect of brain tumor. Brain tumor was diagnosed in 11 cases (85%) by brain scanning. Three cases diagnosed by scan were sent to our department under the clinical diagnosis of CVD.

In conclusion, 7 oligosymptomatic brain tumors and 3 cases of brain tumor diagnosed CVD before scanning were reported.

The Brain Tumor Scanning by $^{99m}$Tc-pyrophosphate


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As we reported previously, we have emphasized the value of brain scan with two $^{99m}$Tc-labels; $^{99m}$Tc-pertechnetate and $^{99m}$Tc-pyrophosphate. The scan with those two labels may increase diagnostic accuracy and serve for immediate differentiation of brain tumor from CVD.

The purpose of the present study is to show the value of combined use of those two labels for the brain tumor scanning.

Also, the usefulness of $^{99m}$Tc-pyrophosphate as the brain tumor scanning agent was discussed.

Eighteen cases of primary and 12 cases of metastatic brain tumor were examined by both $^{99m}$Tc-pertechnetate and $^{99m}$Tc-pyrophosphate. All primary brain tumor patients in this study, were proved by operation or autopsy. The histological finding of those cases were as followed: 6 meningioma, 4 glioblastoma, 4 pituitary tumor and one of each glioma, astrocytoma, oligodendroglioma and chondroma. Also, 12 cases of metastatic brain tumor patients were histologically proved by autopsy except a few cases of which clinically diagnosed by various examinations. The primary diseases of almost all of these were noted as a lung cancer. The lesion of abnormal radioisotope uptake were measured in various projection, and their density was compared with that in sagittal sinus. Then, areas of abnormal radioisotope uptake were graded from 0 to 4: 0, normal (not seen); 1, barely perceptible; 2, distinctly seen; 3, equal to the density of sagittal sinus; and 4, greater than the density of sagittal sinus.

Ten out of 18 cases of primary brain tumor and 4 out of 12 of metastatic brain tumor were identified as the same grade. And all of these cases were classified as grade 3 & 4 which indicate same or higher density to the sagittal sinus except 1 case of metastatic brain tumor. Patients with 1 grade difference in scan by two $^{99m}$Tc-labels, there were 6 & 7 cases in primary and metastatic brain tumor, respectively.

There were only 3 patients which had 2 or more