

Radioisotopic Diagnosis of glioma

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We have performed the comparative study of 29 gliomas, whether the localization diagnosis and histopathological diagnosis in various gliomas are possible or not, by means of RI scintigraphy, RI dynamic study and serial angiography.

These results were following:

1. On the RI scintigraphy and angiography, the diagnostic rate of localization of glioma was 100% in glioblastoma and 88% astrocytoma.
2. The scintigram of glioblastoma was compared with serial angiogram that is classified into four types. As a results, types are all positive

in scintigram. Especially type III containing the element of arteriovenous anastomosis showed tendency of marked increase activity in scintigram.

3. The RI concentration curve was compared to each types of angiogram. Its peak times was most rapid in type III.
4. For the diagnosis of other brain tumor which is difficult to differentiate with glioblastoma or astorocytoma, analysis of RI concentration curve was useful to a certain degree.

Profile Curve of Brain Tumor Scintigram

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The size of tumor image on brain scintigram in resulted from so many complicated factors existing in both patient and instrumentation, that it is practically impossible to estimate the accurate size of tumor by theoretical calculation.

Scintigrams of cylindrical and elliptic cylindrical phantoms filled with ^{99m}Tc -pertechnetate solution were taken in the air and water with a gamma camera and recorded in a digital magnetic tape to find gross relation between the size of tumor and image.

Since the image size of phantoms was variable depending on imaging factors, it was difficult to find the size of phantom on the profile curve of

scintigram, however the distance between two points of inflection measured on the differential curve indicated good approximation to the diameter of phantoms.

Similar estimation tried on 22 scintigrams of clinical cases with various kind of brain tumors which sizes were measured fairly accurately during or immediately after surgery, were also found approximate to the tumor size with errors within the size of a single unit of matrix restricted by the memory capacity of our system. Clinical usefulness of this estimation of tumor size was proved in preoperative planning of the size of minimal craniotomy and the length of ligation of the