The Problem of External Measurements of Brain Isotope Content

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Experimental animal and radiographic human studies were undertaken to define the magnitude of scalp and skull isptope content relative to brain for ^{99m}Tc pertechnetate and ^{131}I-RIHSA.

Tissue volumes and weights of brain, scalp and skull were estimated from postmortem radiography in ten human subjects.

Isotope destribution in animal tissues for ^{99m}Tc and ^{131}I-RIHSA were defined as a function of time. Brain isotope concentration achieved was low relative to other tissues.

From these animal and human data, the extent of scalp and skull interference with external brain isotope measurements was estimated for clinical studies utilizing collimation designed for total cranial counting.

A tracer technique is suggested which would allow correction for the superficially originating count in scalp and skull.

Regional Cerebral Blood Flow in Patients with Brain Tumors a Study with the ^{85}Kr Clearance Method

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Regional cerebral blood flow (rCBF) was measured by the krypton 85 clearance method in 23 patients with brain tumors varying in nature. Two scintillation detectors were positioned over the head of the patients, one of which was mounted over the tumor region, and the other was placed on the non-tumor region. Each detector had 2-inch thallium-activated sodium iodine crystals and was lodged in cylindrical lead shields.

In three patients with third ventricle tumor, the rCBF was markedly decreased in the overall hemispheres.

In one patient with oligodendroglioma, 3 with astrocytoma and 2 with metastatic brain tumor, the rCBF was also markedly depressed in both hemispheres without any localized alteration of blood flow, even though over the tumor region.

In 6 out of 8 patient with meningioma and one with germinoma, demonstrating pathologic vessels in arteriograms, a local increase in CBF was found to correspond to angiographic findings of tumors, while a slight decrease in CBF revealed in the non-tumor region. When the rCBF was calculated by the two compartmental analysis in these cases, in addition to the normal fast and slow components, there was also a third component which represented a compartment with a flow higher than in the grey matter. The third flow component might indicate the blood flow of pathologic vessels in the tumor tissue.

On the contrary, the rCBF over the tumor