106. Studies on Prevention of Cerebral Bleeding

Successive Report—Experimental Optic Fundus Bleeding and Preventional Effect of Kinin-Antagonist

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107. On the Clinical Application of Kr^{85} Clearance Technique to the Determination of Regional Cerebral Blood Flow

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Measurements of regional cerebral blood flow (CBF_r) were performed with Kr^{85} clearance technique, and some fundamental problems concerning to the clinical use of this technique were discussed.

In our technique, approximately 5 ml of saline saturated with Kr^{85} gas was injected into carotid artery, and the recording was made simultaneously with one inch NaI scintillation detector. In most cases, two detectors were used; the one was placed over the temporal region and the other over the frontal region of the injected hemisphere.

Each detector was mounted with a cylindrical collimator which was 5 cm in length and 3.5 cm in diameter.

An experiment was carried out with a cranial phantom to get the effective counting geometry with this apparatus. The result indicated that the region recorded from was mostly confined within one cerebral lobe.

When the isotope was injected into common carotid artery, three components were shown in the clearance curve; two of them represented the clearance of gray matter and white matter respectively, and the third one showing very slow clearance would represent the clearance from the extra-cerebral tissue.

An experiment using a cranial phantom showed that the contribution of radioactivity from the extracerebral tissue to the record was small, therefore

the error in the value caused by this radioactivity from the extracerebral tissue was negligibly small.

The injection of Kr^{85} solution was made twice in the same patient; at first into common carotid artery and then internal carotid artery.

In most cases, the value of CBFr obtained following the injection into common carotid artery was approximately 10% lower than that into internal carotid artery.

In a patient with a large A-V malformation in parietal area, the radioisotope cerebrogram which was obtained with the extracranial counting following the intravenous injection of radioactive hippurate, was made simultaneously with Kr^{85} clearance technique. The value of cerebrogram was markedly increased on the lesion, comparing with that on the other side of hemisphere.

On the contrary, the value determined with Kr^{85} clearance technique was reduced on the lesion. The difference between these two results would be attributable to that the value determined with Kr^{85} clearance technique represented the blood flow which perfuse cerebral tissue, while that with radioisotope cerebrogram represented the blood flow which passed through the cerebral vascular bed containing the A-V shunt.

108. Clinical Experience on Pulmonary Encephalopathy

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