## Measurement of Regional Cerebral Blood Flow by Clearance of $^{85}Kr$ — Observation of the Initial Part of Clearance Curve —

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The correct evaluation of the height of a clearance curve is required to calculate cerebral blood flow by the method of $^{85}Kr$ clearance. In this respect, we investigated the initial part of the clearance curve, recording it at a high speed and comparing it with a RISA dilution curve which could indicate the traveling isotope bolus in the vascular bed of the brain.

Following intracarotid injection of $^{85}Kr$ dissolved in 3 ml fo saline, the gamma activity was traced by a scintillation detector which was coupled to the ratemeter with a time constant of one second and was recorded at a high paper speed (18 cm per minuite)

A RISA dilution curve was made from the same area of $^{85}Kr$ clearance curve was obtained, following the intracarotid injection of RISA dissolved in 3 ml of saline.

Injection of these isotopes were performed at a constant rate (3 ml per 2 second) to make a uniform bolus.

In all of three patients who showed usual clearance curves, a brief initial plateau of maximal counting rate, lasting for a few seconds, was found by high speed recording.

This plateau might result from the traveling bolus of isotope in cerebral blood vessel. This could be supported by the finding that the duration of the plateau was approximately equal to the traversal time of the bolus which could be indicated by the dilution curve of RISA.

In all of 10 cases of arteriovenous malformation, a characteristic initial peak followed by slower falling phase was recorded from the lesion. In plotting the counting rate on semi-logarythmic paper against time, the initial part of the curve could be resolved into two components; one of them might reveal the slower phase, while the other the initial peak. The component representing the initial peak had a smaller T ½ than that of RISA dilution curve. The initial peak, therefore, might represent the traversing bolus through the arteriovenous shunt.

For this reason, this peak must be disregarded in measuring blood flow through brain tissue.

In some cases of angioblastic meningioma and glioma, a small initial peak similar to that in arteriovenous malformation was observed. The T ½ of the peak, however, was much larger than that of the RISA dilution curve; this might reflect the clearance of the compartment with high blood flow rate.

## Topographical Peculiarity of the Distribution of $^{65}Zn$ in the Brain

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Topographical peculiarity of the distribution of $^{65}Zn$ in the brain was investigated in male mice and rats. The $^{65}Zn$ activity at 24 and 48 hours after subcutaneous injection of $^{65}Zn\ Cl_2$ had practically the same value in each part of the brain. At the late intervals (240 and 720 hours), however, the different parts of the brain were divided according to their $^{65}Zn$ activity (dose per gram) into three groups. The cerebrum and the cerebellum showed higher $^{65}Zn$ activity, while the activity in the diencephalon and the midbrain, pons and medulla oblongata was lower. The $^{65}Zn$ activity in the hippocampus and dentate