

**The Regional Selectivity and the Normal Value
of Regional Cerebral Blood Flow Examination
with ¹³³Xenon Clearance Method**

K. UEMURA, K. YAMAGUCHI, H. TAKAHASHI, T. HACHIYA and K. KAWAKAMI

Research Institute of Brain and Blood Vessels, Akita

The regional selectivity and the normal value of Xenon clearance method of Lassen and Ingvar for measurement of regional cerebral blood flow has been carried out.

Six channel detector and water phantom with skull between the phantom and the collimator were used for examination of regional selectivity measurement. Six channel detector consisted of 6 scintillation counter with 2.5×2.5 cm NaI (Tl) crystals collimated by 10.7 cm long \times 3.0 cm (i. d.) lead tubes.

The depth response in the water phantom indicated with the half-value layer was 4.3 cm for the 81 KeV \pm 10% spectrum, 2.0 cm for 31 KeV photopeaks.

The spacial resolution of the detector at a hemisphere water phantom ($14 \text{ cm} \phi \times 7 \text{ cm}$) were indicated by the ratio of the counts rate from isotope inside the optical visual field, which was Xenon contained water block in-

side the truncated cone through the center of the surface of the crystal and through the opening of the collimator, and the counts rate from the total volume of the phantom.

The ratio, in percent, were about 67.4% for 31 KeV \pm 10%, about 72.6% for 81 KeV \pm 10% and about 60% for spectrum over 28 KeV.

Using high over area method, rCBF₁₀ measurements were carried out in 8 individuals who had a normal neurological examination and a normal neuroradiological examination.

The values are as follows; mean rCBF₁₀ of 6 examined region, 49.3 ml/100gm/min with a SD of 6.1; the interregional coefficient of variation of the rCBF₁₀ are \pm 7.2%, on this basis, normal range of interchannel coefficient of variation is within \pm 14.4% with fairly high degree of certainty ($P < 0.05$).

Studies on Cerebral Circulation with One-shot of RISA into the Vein

N. IWAI, A. HIRAKAWA, K. OGINO and M. TAKAYASU

Third Division of Internal Medicine, Kyoto University, Kyoto

M. KUWAHARA

Automation Laboratory, Kyoto University, Kyoto

We try to study on cerebral circulation in connection with cardiac function, and to find a new harmless method with radio-active substance.

(Method) RISA ($40 \mu\text{Ci}$) through heart and brain by intravenous injection into cubital vein, is traced by 2 collimeters putting in front of heart and behind head. We have radiocardiogram (RCG) and radioencephalogram

(REG). Simulation curves are superimposed on RCG and REG by computers, and values about both systemic and cerebral circulation are calculated. Cerebral blood flow (CBF) is indicated by the ratio (CSR) to systemic blood flow.

(Results and Discussion) In cases with normal CBF level (55–85 ml/min./100 g) we find a negative correlation between stroke index