Matsumoto-Shi in Nagano Prefecture. The concentration of Cesium-137 was estimated in 29 placentas by means of chroloplatinic acid method with a low-background gas flow counter (Aloka LBC-22). The concentration varied from 8.3 pCi./kg to 42.9 pCi./kg, with a mean of 19.4±8.3 pCi./kg. In Hiroshima Prefecture higher Cesium-137 levels with a mean of 32.4±10.9 pCi./kg are found by Tabuchi et al using the same technique. For the clarification of this discrepancy between Matsumoto and Hiroshima further investigations might be necessary. The influence of radioactive contaminants on fetus can be more important than that on adult. Since Cesium has a similar metabolic behaviour to potassium and can pass through placenta barrier, the measurement of Cesium-137 in placentas might result more information about radiation effects to fetus. Although in our investigation the relationship between Cesium-137 level and its harmful effects to fetus could not be proved, it was concluded that the further study with more cases should be carried out.

Studies on the Analysis of ^{90}Sr and ^{137}Cs in the Human Placenta

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The radioactive substances injected into the atmosphere due to the past nuclear tests are gradually falling down on the earths surface each year. Some of these radionuclides are taken into human body through various routes.

Therefore it is anticipated that the radioactive fallout may have some effects on human. Among various radionuclides included in the fallout, ^{90}Sr and ^{137}Cs are considered to be the most important ones because of the relatively long half life.

So, the investigation of the accumulation of these nuclides in the human placenta would also be important from the obstetrical point of view.

As analytic method, the fuming nitric acid method and chloroplatinic acid method were used to measure ^{90}Sr and ^{137} Cs in the human placenta. The recovery percentage is estimated at about 70% recovery for both ^{90}Sr and ^{137}Cs.

The concentration of ^{90}Sr in the human placenta varied between 0.42 and 2.0 $\mu\mu$ Ci/one sample, and that of ^{137}Cs varied between 4.93 and 43.9 $\mu\mu$ Ci/one sample, the average values expressed in strontium unit and cesium unit being about 2.79 $\mu\mu Ci^{90}Sr/gCa$ and 25.2 $\mu\mu Ci^{137}Cs/gK$ respectively. The ratio of $^{137}Cs/^{90}Sr$ was estimated at about 13.45 on an average.

From these results, the concentration of ^{137}Cs is estimated to be roughly about 10 times that of ^{90}Sr in the human placenta.

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Measurement of Regional Cerebral Blood Flow by ^{85}Kr Clearance

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In analysing the ^{85}Kr clearance curve to obtain an estimate of the cerebral flow, the simplifying assumption is made that there are two components with widely different flow

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rates in the brain, namely the cortex and the white matter.

Practically, in most cases the clearance curves could be resolved in two monoexponential terms by graphical analysis.

However, in the cases with the localized lesion in which the blood flow is significantly different from that of the surrounding tissue, it should be theoretically impossible to apply the two compartment analysis of calculate the cerebral blood flow.

The clearance curves were obtained from the lesion in two patients with brain tumor (angioblastic meningioma in one patient and oligodendroglioma in the other) which showed rich vascularization in angiogram.

In graphical analysis of these clearance curves, we found one more component with extraordinary fast clearance rate in addition to the ordinary two which reflected the gray and white matter respectively.

The third component obtained in these cases would reflect the exceedingly increased blood flow through the tumor itself.

In these cases the two compartment analysis could not be applied to calculate the cerebral blood flow.

By means of 'Hight-over-Area' method of Høдdt-Rasmussen et al, the cerebral blood flow was calculated from the 14 clearance curves which were obtained in 4 normal cases.

Each of the values obtained by this method proved to be in good approximation with that calculated from the same clearance curve by the two compartment analysis.

By this method the blood flow of the lesion were calculated in the two patients with brain tumor. They measured 69.3 and 97.0 ml/100g/min. respectively, showing the localized increase of the blood flow.

By 'Hight-over-Area' method, the correct value of cerebral blood flow could be obtained even in such cases as local change in cerebral blood flow is so significant that the two compartment analysis could not be applied.

Studies on Cerebral Circulatory Hemodynamics with RISA Measurement of Extra and Intra Cranial Blood Volume

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A new method about the measurement of intra or extra cranial blood volume was studied in this report, using with radioiodinated human serum albumine (RISA).

We used for this purpose 2 different species of collimaters on a new type of detector head which contains two layers of crystals, and indicating double focuses.

Theory and Method

The cranial blood volume V is expressed by equation (1).

$$V = \frac{M}{B} \quad \cdots\cdots (1)$$

In this equation M indicates the total amount of RISA in human head after being uniformly distributed and B the concentration of RISA in 1 ml of blood obtained simultaneously.

If multiplied M/B by R/R (R represents the external tracing counts of RISA on human head) the equation could be converted to (2).

$$V = \frac{R}{B} \times \frac{M}{R} = \frac{R}{B} \times n \quad \cdots\cdots (2)$$

Here, $\frac{M}{R} = n$ can be lead from it of the phantoms modified to human head.

On the assumption in which the cranial distribution is uniform at anywhere in the human head, we are able to apply the above equation to the measurement of extra cranial blood volume V_E and intra cranial blood volume V_I, too.

Hence,

$$V = V_E + V_I = \frac{R_E}{B} \times n_E + \frac{R_I}{B} \times n_I \cdots (3)$$

In this equation (3), if we are able to obtain R_E or R_I, which are indicating external

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