collagen diseases
  systemic lupus erythematosus   4 cases 7.6±0.67 days
  S L E after gluccorticoid   2 cases 7.8, 10.9 days
  rheumatoid arthritis   1 case 7.7 days
  scleroderma   1 case 9.0 days
  Behcet's disease   1 case 8.1 days

renal disease
  nephrosis   2 cases 3.8, 5.9 days
  chronic nephritis with azocytemia   1 case 12.0 days
liver disease   3 cases 11.1±1.07 days
hypersplenism   4 cases 9.7±0.87 days
hyperthyroidism   2 cases 10.4, 8.9 days
hypogammaglobulinemia   2 cases 13.5, 16.0 days
hypothyroidism   1 case 9.2 days

Their T 1/2 values were roughly reverse correlated to the concentrations of serum gammaglobulin in a total of 32 cases (r=−0.43), and their correlation became closer in 26 cases without renal and liver diseases which were considered to have direct effect to the protein metabolism (r=−0.71).

B) Three kinds of IgG were separated by DEAE-Sephadex colum chromatography from sera of patients with multiple gammamyeloma, hypogammaglobulinemia and Graves' disease with high LATS titer; and they were labeled with ^{131}I in Dinabot Laboratory. These ^{125}I-IgG were injected in 9 cases under various condition simultaneously with ^{125}I-labelled-IgG from normal human serum and examined double isotopically.

Metabolism of ^{131}I-IgG was a little more accelerated than that of ^{125}I-IgG.

             T ½ of ^{125}I-IgG

However, the T ½ of ^{131}I-IgG value were almost equal in all cases, and any significant changes were not seen in T ½ values of ^{131}I-IgG from different origins.

C) In some cases, retained radioactivity in the body was measured by the whole body counter. By this counter, only 4μCi of ^{131}I-IgG was allowed to perform the metabolic studies, and double isotopical examination were also easy.

The radioactivity obtained from whole body counting was shown to coincide very well with the values calculated from the sums of urinary excreted radioactivity in the subjects who strictly collected the urine samples, and T½ values from radioactivity in serum was almost equal to that retained radioactivity from whole body counting.

From these results the metabolism of IgG was considered to depend greatly on the conditions of donors, especially on the gamma-globulin concentration in their sera; and by using the whole body counter, the metabolic studies could be performed by far smaller doses of radioisotope and without troublesome steps of venopuncture and the collection of urine.

Studies on Cesium-137 Levels in Human Placentas

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Cesium-137 is an important fission product, and currently present in all persons as a result of its contamination of food. The body burden and the distribution of this radiocontaminant within human tissue have been investigated by several investigators. The radiation effect of the fission products on pregnant woman and fetus rises in importance because of the increased attention being paid to teratogenic effect. From May to October 1966 an investigation for Cesium^{131} measurement in placentas was carried out at

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