Experimental Studies for the Zn Concentration in Pancreas

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No experiments have yet been made which allow to figure pancreas as contrast media for radioscintigrams. The present reports deal with some preliminary studies of Zn distribution process in pancreas tissues.

The first part of our works were carried out on some organs in abdomen to examine the $^{65}$Zn distribution from 1 hour to 10 hours after injection. $^{65}$Zn appeared in high concentrations in the pancreas and small intestine at 3 hours and 7 hours, respectively. The chronological change of $^{65}$Zn uptake in the liver was less than in the pancreas. The blood contained the lowest concentrations of the organs studied.

Next, $^{65}$Zn solution was administrated orally. At 4, 7, 24, 48 hours and 7 days after administration the pancreas was quickly removed. The pancreas was fractionized in cellular components, that was, nuclei, zymogen granule, mitochondria and microsome by an usual centrifuging. In initial period after administration, the zymogen granule concentration was higher than the other components. In 7 hours after administration the zymogen granule concentration decreased rapidly. Both the mitochondria and microsome concentration in this time were the highest through the 7 days observation. A little quantity of Zn in the above components remained until the 48 hours observation.

In initial period the high concentration of Zn in the pancreas zymogen granule must be one of the keys of finding a new contrast media for radio scintigram. It is known that the zymogen granule is closely related with newly synthesized enzyme. The zymogen granule chromatography using DEAE-Sephadex was carried out on with Zn injected animals and on without ones. High concentration of $^{65}$Zn has appeared in the one peak, which shows protein fraction. Thereafter, another chromatography, also, was made down for proteolytic enzymes. $^{65}$Zn was found just in the carboxypeptidase fraction. This means that zinc must be strongly bound ed with carboxypeptidase. If the binding form between zinc and some precursors of carboxypeptidase. If the binding form between zinc and some precursors of carboxypeptidase will be resolved in future, organic $^{65}$Zn compound must be available for radio scintigram.

Brain Scanning—Experiences in Our Clinic—

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Recently, 27 patients were studied with neohydrin $^{203}$Hg and merphyrin $^{203}$Hg brain scan in our clinic. Among these, 21 patients were found to have brain tumor and 6 had indicates the definite localization of tumor, non neoplastic neurological disease. Of 21 patients who had brain tumor, the scanning was positive in 13 cases, equivocal in 4 cases and negative in 4 cases. A positive scan an equivocal scan indicates abnormal isotope
concentration on either side of brain hemisphere but the localization was not definite and a negative scan indicates no abnormal concentration of isotope. Thus including equivocal scan, the scanning was positive in about 80% of cases.

When these results were compared with histological findings, there was a tendency of higher rate of positive scan in meningioma, glioblastoma or oligodendroglioma. The scan was negative in astrocytoma or heman-

gioblastoma.

In non neoplastic cases, a case of chronic subdural hematoma showed an equivocal scan was all negative.

Although our cases are yet small in number, these findings were quite similar to those which have been reported on literature. And the brain scanning was considered to be quite useful in the decision of operative approach to the tumor or in clinical follow up of various neurological conditions.

V. Circulation

Studies on the Permeability and Absorption of the Pulmonary Lesions

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Studies on the permeability and absorption of the pulmonary lesions is important to clarify the mechanism of the lesion formation, natural history of the lesion and best therapy of the pulmonary diseases.

As for this problem, we have already reported the permeability of the pulmonary cavities.

Pulmonary tuberculosis, candidiasis, suppuration and Brown-Pearce cancer were made in the lung of male rabbits weighing around 2 Kg. Under fluorography, $^{32}$P solution—100 $\mu$C/0.3 ml—was directly and transdermally injected into cavity and other lesions. Aqua destillata, physical saline solution and 5, 25, 50% glucose solution were used as solvent of $^{32}$P.

Animals were killed after certain period of time—60-90 minutes—and macro- and microautoradiogram were obtained. lml of blood was drawn from the femoral artery in periodic intervals—1-5 minutes—and radiographic analysis of these samples was made.

Results

1. Macroautoradiogram showed a relatively quick passage of intracavitary injected radioisotopes through the cavitary wall into the pericavitary tissues and outer normal tissues. This fact probably showed the permeability of the cavitary wall.

Difference in the mode of passage among these diseases—tuberculosis, suppuration, candidiasis—was not clarified, but activity of Brown-Pearce cancer lesion was remarkable.

2. Similar finding were obtained by microautoradiogram. Gradually decreasing activities of radioisotopes were seen in the necrotic area, cavitary wall and around the cavity, in that order. Also considerable difference in $^{32}$P—uptake of the cells were noted among tuberculosis, candidiasis and suppuration and especially microautoradiogram of the tuberculous lesion showed much activities in small, round, clear cells which seems to be histiocytes.

3. Analysis of blood radioactivity curves revealed slight differences in decrease of absorption of isotopes to 60% of the original. —tuberculosis, with cavity, $3^{32}$; without