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MEASUREMENT OF BLOOD FLOW OF CAUDA EQUINA BY USING THE RADIONUCLIDE MICROSPHERES. H. Yamamoto, N. Arimizu, S. Inoue, Y. Kato, T. Suguro and A. Matsuoka. Chiba University Chiba

The ischemia in the stem of nerve fibers will cause a variety of neurological disorders. Blood flow of cauda equina has not been accurately measured because of its anatomical peculiarity and limited methodology. We have experimentally measured the blood flow of cauda equina by using a method of embolization of microspheres and evaluated the validity of that measurement. Seven monkeys were used in this experiment. I-125 labeled carbonized microspheres were injected into the left atrium and the reference blood sample was withdrawn from the femoral and axillary artery. After the animals were killed, organs and tissues were separated, weighed and each radioactivity was measured with well-type gamma counter. Then the blood flow was evaluated of cauda equina as well as other organs. The blood flow of cauda equina was measured 3.56 ± 1.72 ml/min/100g. The blood flow of other organs measured simultaneously showed approximately same results reported by other authors, suggesting the validity of this experiment. The cauda equina as well as the spinal cord segments were histologically examined, showed the microspheric particles in the tissues proving the principles of the microsphere method.

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QUANTITATIVE ESTIMATION OF CSF FLOW WITH RADIONUCLIDE CISTERNOGRAPHY — A NEW PROPOSAL —. A. Komatani, K. Fukuda, K. Yamaguchi, and O. Nakai. Yamagata University School of Medicine. Yamagata, Japan.

Quantitative evaluation of radionuclide cisternography has been attempted using computer system. Count rate density (cpm/pixel) in ROIs settled on the cisterna magna, basal cistern, parasagittal region and lateral ventricle were recorded at 3, 6, 24 and 48 hours after intrathecal administration of 1 mCi In-111 DTPA. The activities in each times were plotted in arithmetic ordinate against logarithmic time axis. Based on these curves, peak time, peak to peak time (between different ROIs), inflow gradient (Ii), outflow gradient (Io) and CSF flow index (If=Io/Ii) were defined. Peak time and peak to peak time were very useful for quantitative estimation of the radionuclide cisternography. Moreover, it might be suggested that the CSF flow index at the parasagittal region was capable for quantitative evaluation of the resistance to cerebrospinal fluid absorption.

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CORRELATION BETWEEN CT AND RI-CISTERNOGRAPHY IN HYDROCEPHALUS (PART 2). Y. Hirono, K. Takizawa, T. Gokan, A. Shinotsuka, T. Kitahara and T. Hishida. Department of Radiology, School of Medicine, Showa University, Tokyo.

In preceding presentation we could not always obtained good correlation. This time observing in detail, we measured many portions of ventricle system and external CSF space as index in 35 cases of ventricular dilatation. Acquired value of measurement was converted into score in comparison with normal range that we obtained by means of measuring normal cases. Some indices that had good correlation with diagnoses by RI-cisternography (RI) were selected. They were the ratio of width of temporal horn and distance between bilateral bodies of lateral ventricle, width of Sylvian fissure and the number of sulci. Adding 2 other indices that indicated ventricular dilatation, total score was established. CT findings were classified into 3 patterns (NPH, intermediate and atrophy) by total score. And CT diagnoses were compared with diagnoses by RI. The result was as follows. Most of cases diagnosed as NPH by CT were also diagnosed as NPH by RI. In atrophy similar result was obtained. But in intermediate only about a half of cases diagnosed by CT were also diagnosed as the same pattern by RI, and the rest were NPH and atrophy. It was suggested that at least the cases diagnosed as NPH by CT were almost NPH, but there being the cases of NPH not to be diagnosed as NPH by CT, RI was essential to diagnose NPH.

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CISTERNOGRAPHIC FINDINGS FOLLOWING SUBARACHNOID HEMORRHAGE. H. Matsuda, H. Mori, N. Tonami and K. HISADA. Department of Nuclear Medicine, Kanazawa University. Kanazawa.

Of 45 cisternograms following subarachnoidal hemorrhage, ventricular reflux and subarachnoidal space block were observed in 44 scans (98%) and in 38 scans (86%) respectively. Radionuclide CSF clearance of head had no correlation with the degree of subarachnoidal space block, which seems to suggest other radionuclide pathways than parasagittal arachnoidal granules. It was thought to be mostly transependymal pathway. The cases who had complete improvement following shunt surgery showed not only scintigraphic findings of persistent ventricular reflux and well-defined ventricular image at both 24hr and 48hr after intrathecal injection of In-111-DTPA or Yb-169-DTPA but also relatively delayed radionuclide CSF clearance. Contrary, the cases who had no improvement showed scintigrams of ill-defined ventricular image and normal clearance. These findings demonstrate that transependymal CSF absorption is a chronic process and suggests compensated state of hydrocephalus.