

94

QUANTITATIVE RECEPTOR AUTORADIOGRAPHY : COMPARISON WITH RADIO-RECEPTOR ASSAY. H.Mori, K.Shiba, H.Matsuda\*, S.Tsuji\* and K.Hisada\*. Radioisotope Center and School of Medicine, Kanazawa University, Kanazawa.

Receptor autoradiography has several important advantages over radio-receptor assay (RRA) which is still widely utilized. However, it has been said that association and dissociation rates obtained from receptor autoradiography do not necessarily agree with the findings from the tissue homogenates, and receptor autoradiography shows a distortion of the saturation curve at low concentration of H-3 QNB, as for the muscarinic cholinergic receptors.

Therefore, we compared receptor autoradiography with RRA, in terms of the kinetic parameters for H-3 QNB in the rat striatum. The  $K_d$ (app)-values obtained from both methods depended on the incubation time and receptor-ligands concentration ratio. On the same condition, receptor autoradiography agreed well with RRA. Quantitative receptor autoradiography might be a useful method for the pathophysiological studies using several animal models and the fundamental studies on Emission Computed Tomography.

95

EVALUATION OF I-123 ISOPROPYLIODOAMPHETAMINE (IMP) AS A TRACER FOR LOCAL CEREBRAL BLOOD FLOW (CBF) IN THE EXPERIMENTAL BRAIN TUMOR, COMPARISON WITH C-14 IODOANTIPYRINE (IAP) AUTORADIOGRAPHY. A.Watanabe\*, I.Odano, K.Sakai, Department of Neurosurgery, Brain Research Institute\*, Department of Radiology. Niigata University. Niigata.

I-123 IMP is used to evaluate the local CBF of patients with cerebrovascular disorders. This study was undertaken to evaluate the usefulness of this tracer for local CBF in the experimental brain tumor using double tracer autoradiographic technic. Rat brain tumor strain induced by Rous sarcoma virus was used. Fifty-five minutes after I-123 IMP (2.25mCi) injection, C-14 IAP (30µCi) was infused for 30 sec to measure local CBF. In other experiments rats were killed 1 min, 15 min, 50 min and 90 min after I-125 IMP (75µCi/100g) injection. The autoradiograms obtained 15 min after I-123 IMP injection were similar to the C-14 IAP autoradiograms which showed low and heterogeneous blood flow in the tumor. Increased accumulation in the tumor and the choroid plexus was obtained at 1 min after I-125 IMP injection, and the white-to-gray-matter optical density ratio increased at 50 or 90 min after I-125 IMP injection. So I-123 IMP as a tracer for local CBF might be also useful in the brain tumor about 15 min after injection.

96

THE DISTRIBUTION OF I-131-IMP IN EXPERIMENTAL ISCHEMIC GERBIL BRAIN. S.Jinnouchi, H.Hoshi, S.Nagamachi, Y.Mori, K.Onoe, K.Watanabe, Y.Tahara, T.Ueda, K.Kinshita, AND T.Yamaguchi. Miyazaki Medical College, Miyazaki.

We studied the distribution of N-isopropyl-p- I-131 iodoamphetamine (IMP) of the ischemic brain using mongolian gerbils. The right common carotid artery was ligated. After given time intervals, 50 µCi IMP was injected intravenously into 11 gerbils which had severe neurological symptom (ligation model). On the other hand, the right common carotid artery was clump by clip and recirculated at 3 hours after. After given time intervals, 50 µCi IMP was injected into 11 gerbils which had symptom (recirculation model). One minute after injection, each gerbil was sacrificed and autoradiography was performed. IMP uptake dose of various part of the brain was calculated for %Dose/g from each autoradiogram.

In ligation model, low perfusion was observed in right cerebral hemisphere and brain stem (5-10% of normal value), and also in left side (40% of normal value). In recirculation model, high uptake region was observed partially in right cerebral hemisphere and thalamus (90-150% normal value) from 10 minutes to 3 days after recirculation. It seemed that this high uptake showed luxury perfusion in part of severe tissue damage. In the left side, the low perfusion recovered almost normal value at 1-3 days after recirculation.

97

A DOUBLE LABEL AUTORADIOGRAPHIC TECHNIQUE BY CHEMICAL WASHING METHOD USING I-125-IMP AND H-3-DG. H.Sumiyama, H.Matsuda, S.Tsuji, H.Ooba, H.Terada, K.Hisada, K.Ikeda, K.Shiba, H.Mori and H.Seki. Department of Nuclear Medicine and Neurosurgery, School of Medicine and Radioisotope center, Kanazawa University and Toyama Medical and Pharmaceutical University, Kanazawa.

We performed a double autoradiographic technique by chemical washing method with 2,2-dimethoxypropane (DMP) using N-isopropyl-I-125-iodoamphetamine (I-125-IMP) and H-3-deoxyglucose (H-3-DG). Blood flow image is obtained by I-125-IMP, shielding the beta-ray of H-DG with thin membrane (Rumilar membrane). Glucose metabolic rate image is obtained by H-DG, washing out I-125-IMP with DMP. I-125-IMP was almost washed out by three hours' washing with DMP, although the radioactivity of H-3-DG was not changed with chemical washing. No exposure was seen by the slices washed with DMP when Rumilar membrane is placed on it. This autoradiographic technique seems to be useful for evaluating cerebral blood flow and metabolism simultaneously under various conditions because it is possible to spend less time than half-life difference method.