

125

Xe-133 INHALATION METHOD FOR MEASURING REGIONAL CEREBRAL BLOOD FLOW IN THE CASES WITH CEREBROVASCULAR DISEASE. A.Matsumoto, H.Kikuchi, T.Shimomura, T.Arimitsu, S.Tsutomoto and J.Karasawa. Dept. of Neurosurgery National Cardio-Vascular Center, Suita, Osaka

During the past few years, regional cerebral blood flow studies using Xe-133 inhalation method has rapidly spread. But the reliability of this method is still under discussion. The purpose of this study is to discuss its clinical usefulness and limitation in the diagnosis and treatment of 189 cases with cerebrovascular disease. Regional CBF measurement was carried out by the "Novo Inhalation Cerebrograph". As the results, we confirmed CBF values obtained by this method well corresponded with that of the intracarotid injection method. And this technique was adequately sensitive to represent the CBF changes related to some of the neurological deficits, such as hemiplegia, while it was hard to diagnose the lesion site in the occlusive cerebrovascular disease. In addition, pre- and postoperative CBF studies in the cases with extracranial-intracranial bypass surgery had been shown to be acceptable for evaluation of their clinical course.

It may conclude that this atraumatic method is a practical and safe procedure for the determination of regional CBF, especially for repeated studies in the cases of long-term follow-up, such as the patient after the bypass surgery.

126

THE ASSESSMENT OF THE STA-MCA ANASTOMOSIS BY THE METHOD OF INTRACAROTID INJECTION OF Tc-99m-LABELED HUMAN ALBUMIN MICROSPHERE. H.Etani, K.Kimura, Y.Tsuda, Y.Isaka*, Y.Iwata** M.Imaizumi, T.Nukada***, *The Division of Nuclear Medicine, **The Department of Neurosurgery, ***The First Department of Internal Medicine, Osaka University Medical School. Osaka.

The assessment of regional blood perfusion through the STA-MCA anastomosis was performed by the method of intracarotid injection of Tc-99m-labeled human albumin microspheres (Microsphere Scintigraphy). Scintigraphy was performed in 13 cases with ICA occlusion, in 1 case with MCA stenosis, in 1 case with MCA occlusion. The size of microsphere was 15±5µm in diameter. Tc-99m-labeled human albumin microspheres were injected into the CCA on the bypassed side in the case of ICA occlusion and injected into the ECA in the case of MCA stenosis or occlusion. The brain scintigrams were obtained with gamma camera from 5 different views. None of the patients showed any clinical complications as a result of the procedure. The radioactive microspheres injected into the CCA or ECA on the bypassed side were distributed in the area of intracranial brain tissue perfused by anastomotic vessel as well as in that by ECA. This method was excellent for imaging the regional blood perfusion through the anastomotic vessel and findings of the scintigram were well compatible with those of postoperative angiography.

128

THE ASSESSMENT OF CEREBRAL BLOOD PERFUSION BY THE DOUBLE LABELED ALBUMIN MICROSPHERE. H.Etani, K.Kimura, Y.Isaka, Y.Tsuda, K.Kususmi, M.Imaizumi and T.Nukada. Division of Nuclear Medicine, 1st Department of Internal Medicine, Osaka University Medical School. Osaka

Labeled albumin microsphere (MS) with two different radionuclide, i.e., Tc-99m and In-111, were newly applied for the assessment of cerebral blood perfusion in cases with CVD. The labeling procedures were as follows, In-111 MS; 3mCi of In-111 chloride in 10% of sodium acetate was added to a MS vial. The vial was shaken and heated in a boiling water for 5 min. After cooling, the vial was centrifuged. The sediment (labeled MS) was resuspended in a saline solution containing Tween 80., Tc-99m MS; 15mCi of Tc-99m pertechnetate was added to a MS vial. After shaking the vial at room temperature, it was centrifuged and the sediment was resuspended in a saline solution containing Tween 80. The assessment of cerebral blood perfusion was achieved by administering the tracers into CCA; 600µCi of In-111 MS was injected into a CCA and 5mCi of Tc-99m MS into contralateral CCA. The MS scintigrams from multiple views were collected at two γ energy range, 140KeV +10% for Tc-99m and 173KeV +10% for In-111. The scintigrams expressed the cerebral blood perfusion of both hemispheres and detected the ischemic area in CVA cases. The double tracer MS method was one of the clinical useful methods for the assessment of cerebral blood perfusion in cases with CVD.