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In-111 LABELED PLATELETS SCINTIGRAPHY AS THE METHOD FOR DETECTING VASCULAR THROMBI IN CEREBROVASCULAR DISEASE. Y.Isaka, Y.Tsuda, H.Etani, K.Kimura, E.Omori, Y.Kusumi*, O.Uyama, M.Kusunoki, S.Yoneda, M.Imaizumi, H.Abe** Division of Nuclear Medicine*, 1st Department of Internal Medicine** Osaka University Hospital.

The radionuclide imaging to detect vascular thrombi in ischemic cerebrovascular disease was performed with In-111 labeled platelets. Platelets was labeled by modified method of Heaton et al. 70-80% of In-111 oxine complex was taken up by platelets. 400-700µCi of labeled autologous platelets were injected intravenously in each patient. Scintigraphic study for the head, neck, trunk, and thighs were performed at 1hr, 48hr and 96 hr after tracer injection by means of a wide field gamma camera fitted with a medium energy collimeter. Platelet imaging study were performed in 12 patients with ischemic cerebrovascular disease. (10 male and 2 female.) TIAs in 8 patients and completed strokes in 4. Out of the 12 patients, 4 patients had abnormal focal area of increased radioactivity in ICA and 1 patient in MCA. Abnormal increased radioactivity was observed more obviously on delayed images at 48hrs than at 1hr after tracer injection. In-111 labeled platelets scintigraphy is non-invasive and useful method for detecting the vascular thrombi in ischemic cerebrovascular disease.

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EVALUATION OF In-111 OXINE LABELED PLATELETS SCINTIGRAM IN ISCHEMIC CEREBROVASCULAR DISEASE. M.Takemoto, A.Doi, T.Furutsubo, Y.Manabe and C.Sone Department of Neurological Surgery and Laboratory of Radioisotope, Kagawa Prefectural Central Hospital, Takamatsu.

In-111 oxine labeled platelets were used to scan the head and neck for detection of platelets aggregation in twenty-one patients who had ischemic cerebrovascular disorders including 16 completed stroke and 5 TIAs patients. Ten patients showed abnormal scans and eleven had normal scans. Eight patients of abnormal scans showed abnormal accumulation in the vascular lesions which confirmed by angiography. In-111 oxine labeled platelets scintigram was performed for two cases before and after treatment by aspirin or endarterectomy. The abnormal accumulation of radioactivity was decreased or disappeared after treatment. These findings suggest that this method may be one of the useful indicator for treatment of ischemic vascular disorders. The abnormal accumulation of radioactivity in the vascular lesions was related to the interval from the onset of stroke, anticoagulant therapy and the severity of the vascular lesion.

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EVALUATION OF VASCULAR IMAGING WITH Tc-99m LABELED RED BLOOD CELLS FOR CEREBROVASCULAR DISEASE--CEREBRAL BLOOD VOLUME-- M.Takemoto, A.Doi, T.Furutsubo, Y.Manabe and C.Sone Department of Neurological Surgery and Laboratory of Radioisotope, Kagawa Prefectural Central Hospital, Takamatsu.

Vascular imaging with Tc-99m labeled red blood cells (Tc-RBCs) is the valuable method for measuring of cerebral blood volume because that Tc-RBCs are non-diffusible indicator. The efficient of labeling yield of Tc-RBCs using in vitro method was 93.1%. The in vivo stability of Tc-RBCs after intravenous injection was measured using with the paper chromatography. The percentage of radioactivity (RA) bound to the circulating RBCs was 89.3% at 5 min., 95.2% (30min.) and 96.3% (60 min.) after injection. The RA at the head following injection of Tc-RBCs was studied using gamma camera with minicomputer. The RA of Tc-RBCs at the head decreased more rapidly compared with the physical half-life of technetium-99m. As the RA at the head at 5 min. after injection was assigned a 100% value, the RA was 93.9% (20min.), 91.9% (30min.), 88.2% (40min.), 85.3% (50min.) and 82.6% (60min.). Further more the cranial blood volume index (CBVI) as the cerebral blood volume was calculated by the following equation:

$$CBVI = \frac{(\text{RA of ROI at the head})}{(\text{RA of 1 ml of blood})}$$

The control CBVI obtained from 11 hemispheric regions was 5.2 ± 0.99 , but CBVI of the lesion side of cerebral infarction was 4.6 ± 1.42 .

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THE ASSESSMENT OF CEREBRAL BLOOD PERFUSION BY THE DOUBLE LABELED ALBUMIN MICROSPHERE IN CASES WITH INTERNAL CAROTID ARTERY (ICA) OCCLUSION. H.Etani, K.Kimura, Y.Tsuda, Y.Isaka, M.Kusunoki, M.Matsumoto, T.Asai and S.Yoneda Division of Nuclear Medicine, 1st Department of Internal Medicine, Osaka University Medical School, Osaka

Labeled albumin microsphere (MS) with two different radionuclides, i.e. Tc-99m and In-111 were newly applied for the assessment of cerebral blood flow perfusion in 10 cases with ICA occlusion. The labeling procedures were precisely presented at 20th annual meeting of the Japanese Society of Nuclear Medicine. The assessment of cerebral blood perfusion was achieved by administering the tracers into common carotid arteries (CCA); 600µCi of In-111 MS was injected into a CCA and 5mCi of Tc-99m MS into contralateral CCA. The MS scintigrams were collected at two gamma energy ranges, 140KeV+10% for Tc-99m and 173KeV+10% for In-111. In cases with ICA occlusion, the dual tracer MS imaging allowed the diagnosis and the evaluation of collateral circulation pattern, such as from contralateral ICA or from ipsilateral ECA via ophthalmic artery. The double tracer MS method was one of the clinical useful methods for the assessment of cerebral blood perfusion in patients with ICA occlusion.