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**RADIOISOTOPIC STUDY OF THE ASSESSMENT OF PERIPHERAL ARTERIAL DISEASE.** T.Ohta, M.hirai, J.Matsubara and S.shionoya. Dept. of Surg. Nagoya University Branch Hospital. Nagoya.

Arterial insufficiency of the feet was examined by injection of the  $^{99m}\text{Tc}$ -pertechnetate intravenously. The aim of this non-invasively and functionally, and finally to reveal the healing potential of the ischemic ulcer of the foot. The total case studies were 123 feet. The patient lay in the supine position, and the feet were placed over the detector of the gamma camera. In a state of hyperemia 10 mCi  $^{99m}\text{Tc}$ -pertechnetate was rapidly injected into the antecubital vein. The velocity between the middle foot and toe was measured and perfusion index, which defines the ratio of the total counts in the foot during 200 seconds after the arrival of the radioactivity to the counts of the plateau at equilibrium, was calculated. The velocity of the ischemic foot without ulcer (65 feet) was over 2 cm/s. and with ulcers (28 feet) under 2 cm/s.. The ulcers with the velocity under 1 cm/s. needs clinically over 1 month to be healed up. The perfusion index reveals also the healing ability of the ischemic ulcer. This method is valuable to quantitate the circulatory changes after the surgical procedure, but it has a limitation to observe the small changes by the ulcer and the effects after the conservative treatments.

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**RADIONUCLIDE IMAGING OF VASCULAR DISEASES.** A. Okuyama, H.Tajima, T.Ohya, R.Saitoh, S.Hosoi, H.Hikita, H.Nishikawa, K.Honda, T.Kumazaki, Y.Yamagishi, K.Ebata. Nippon Medical School. Tokyo.

A comparative study of radionuclide image (RN), computed tomogram (CT) and angiogram was performed on vascular disorders, particularly on aneurysms (53 lesions) and occlusive disorders (26 lesions) of the aorta and major arteries. RN and CT examinations demonstrated approximately the localization, shape and size of aneurysms without dissection, however in observing the thrombus formation and adverse effect to the adjacent organs, CT was superior to RN. In dissecting aneurysm of the aorta, RN was superior to CT for demonstration of the localization and involvement of major arteries, however it was inferior in observing the true lumen or thrombus formation. The specific appearances of RN in this disturbances were tapered visualization of the true channel in early phase and delayed filling of the false channel. The imaging of both should be carefully analysed in the case of thrombus formation. RN demonstrated clearly the localization, degree and length of the stenosis in occlusive diseases, which sometimes was even superior to angiographies for getting the further information of hemodynamic changes through the collateral circulation.

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**AN APPLICATION OF RI ANGIOGRAPHY ON CHEST DISEASE.** K.Nagase, Y.Arakawa, S.Iida, H.Utsumi, H.Mitsuyama, Y.Nakata, H.Uchimura. Juntendo University School of Medicine. Tokyo.

Using Tc-99m in order to examine the cancer of the lung, particularly tumor in the hilus pulmonis part, we observed the blood flow in the lung before and after the radiation therapy. Marking three ROI in each lung, six in both lungs altogether, we obtained an activity curve and found that the recovery of the blood flow in the lungs is observed by using RI angiography quicker than using X ray film.

Using Tc-99m with body labelling method, we labeled Tc-99m on the red blood cells. It is found that the narrowness in the blood flow in the cases of the dissecting aneurysm of the aorta and marfan syndrome is observed by using the SPECT method clearer than the Tc-99m saturation method.

In the case of using artificial valve instead of a mitral valve, we applied the SPECT method. It is found that this method is very useful to observe the change of illness of large artery, because we can study very well the relation between the enlargement in the main pulmonary artery and the left and right pulmonary artery.

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**A STUDY OF SHUNT FLOW IN DIABETIC PATIENTS WITH GANGRENS BY INTRA-ARTERIAL INJECTION OF Tc-99m-MICROSPHERE ALBUMIN.** Y.Mori\*, N.Okazawa\* S.Sugimoto\*, H.Sekine\*, Y.Watanabe\*, K.Kawakami\*, T.Shimada\*\*, N.Katsuyama\*\*\*. \*Dep.Rad, \*\*Dep.3rd Int, Jikei Uni.Sch.of Med. Tokyo, \*\*\*Dep.Rad, Ryukyu Uni. Naha.

Peripheral vascular perfusion in lower extremities were examined by intra-arterial injection of Tc-99m-MIS on 36 diabetic patients. Shunt flow in lower extremities was evaluated by the counts in lung, after intra-femoral artery injection of Tc-99m-MISA. The shunt rate was calculated by the following equation.

$$\text{shunt rate (\%)} = \frac{\text{lung counts}}{\text{total counts}} \times 100$$

The images of the lower extremities were classified in two patterns; 1) Muscular type (M type); Muscular shapes are well visualized. Activity in knees, ankles and toes is low. 2) Dermal superficial type (D type); Muscular shapes are not definitely identified. Activity in knees, ankles and toes is high. In some cases with gangrens, hot spots were noted corresponding to gangrens. Twenty-nine cases were D type, 7 cases were M type. Five cases complicated gangrens were D types. D types were more than M types in complications. Mean shunt rate was  $7.3 \pm 3.9\%$  in D type, and  $1.6 \pm 0.4\%$  in M type. D types were significantly higher than M types in shunt rate. D type with high shunt rate were recognized in sympathectomy cases, who were TAO without diabetes. This result suggests that relationship between DM and autonomic nerve disturbance is significant.