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USEFULNESS OF TL-201 MYOCARDIAL SCINTIGRAPHY IN THE DIAGNOSIS OF THE RIGHT VENTRICULAR OVERLOAD IN VARIOUS RESPIRATORY DISEASES.

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For evaluation of the right ventricular overload, Tl-201 scintigraphy was performed in 232 patients with various respiratory diseases, and quantitative assessment of it was studied.

On intravenous administration of Tl-201 (74MBq), initial transit of the tracer through the heart and the subsequent static images were recorded in the left anterior oblique position using a scintillation camera coupling to a small digital computer.

The radioactivity of total injected dosis of it(T) was calculated from the entire region on initial transit of the tracer bolus through the heart and that of right ventricle(R) was done from the static image, on which the radionuclide angiogram of Tl-201 showing the right ventricle was superimposed.

By these procedures, the right ventricle uptake ratio of Tl-201 was calculated by ratio R to T.

These values in the cases with positive and negative visualization of the right ventricle on the original photoscintigram, were $1.93 \pm 0.4\%$ and $0.99 \pm 0.3\%$ respectively.

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STUDY ON TL-201 SCINTIGRAPHY IN PATIENT WITH DIFFUSE PULMONARY DISEASE.

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Scintigraphy with Tl-201 chloride was performed in 110 patients with diffuse pulmonary diseases. Diffuse bilateral lung uptake of Tl-201 was demonstrated in 25 of 27 cases with diffuse interstitial pneumonia, 2 of 3 cases with hypersensitivity pneumonitis, 8 of 9 cases with sarcoidosis and so on, but in diffuse panbronchiolitis and pulmonary emphysema, slight lung uptake of it were obtained in most cases. In diffuse interstitial pneumonia, no close correlation was observed between the grade of the lung uptake and clinical findings such as fever, rales, ESR, LDH, %VC, PaO₂, and so on. With regard to roentgenological findings, the marked lung uptake was observed in cases not only with reticulonodular shadows but also with ring ones and without ones.

In order to evaluate the motion of lung by respiration, perfusion lung scintigram at deep inspiration(I) and expiration(E) were obtained, and the count ratio of (E-I) to I per each element and the difference of numbers of picture element in unilateral lung between both images were calculated. These values in diffuse panbronchiolitis and interstitial pneumonia were lower than in healthy lung.

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A TECHNIQUE FOR QUANTIFYING LUNG UPTAKE OF TL-201 ON SCINTIGRAM WITH TL-201 CHLORIDE.

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On intravenous administration of Tl-201 (74MBq), initial transit of it through the heart as well as subsequent uptake by the chest were recorded in the supine position using a scintillation camera coupling to a small digital computer, and remaining the patient in the same position, perfusion lung scintigram or transmission one was obtained too. The radioactivity of total injected dosis of it(T) was calculated from the entire region on the initial transit of the tracer bolus through the heart, and that of unilateral lung(L) was done from the anterior image of Tl-201 on which isocount map of perfusion image or transmission one was superimposed. By these procedures, the lung uptake ratio of Tl-201 was calculated by ratio of L to T, and expressed as per cent per entire unilateral lung and mean value(%) per one picture element. The average values of the lung uptake ratio in the right and left lung were $1.5 \pm 0.9\%$, $1.2 \pm 0.6\%$ in healthy lung, $3.1 \pm 1.8\%$, $1.8 \pm 1.2\%$ in circulatory diseases, $3.2 \pm 1.7\%$, $1.8 \pm 1.0\%$ in diffuse pulmonary diseases respectively. This technique is useful to evaluate the lung uptake of Tl-201 on the scintigram.

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STUDIES ON EXPERIMENTAL NEUROGENIC PULMONARY EDEMA BY IN VIVO LABELED Tc-99m-RBC.

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To investigate the mechanism of neurogenic pulmonary edema, continuous monitoring of pulmonary blood volume with the use of in vivo labeled Tc-99m red blood cells was performed in mongrel dogs. During serial pulmonary imaging anesthetized dog received intrathecal injection of Veratrine to produce experimental neurogenic pulmonary edema. Immediately after injection, pulmonary activity gave sharp rise which meant increment of pulmonary blood volume. The blood pressure of the left ventricle and the pulmonary arteries went along with the pulmonary activity. On the other hand, 6-hydroxydopamine (noradrenalin discharging agent) which produced no pulmonary edema, gave the same increment of pulmonary blood volume. The facts suggested the shift of blood from systemic to pulmonary circulation had to occur but was not the only factor to produce neurogenic pulmonary edema. With high labeling efficiency(98%) to RBC and little activity in the plasma, in vivo labeled Tc-99m-RBC allowed us to monitor the change in pulmonary blood volume without interference with radioactivity in the extravascular fluid.