

It is considered that diffusion ability is able to measure by double tracing method using RISA and ^{133}Xe . It is not satisfactory to

use ^{133}Xe only for the measurements of pulmonary diffusion and circulation.

Study of Regional Pulmonary Ventilation and Regional Pulmonary Circulation

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To investigate regional pulmonary ventilation and regional pulmonary circulation in various chest diseases, radiopulmonography and scintiscanning of lung after intravenous injection of ^{131}I -MAA were used. Radiopulmonography is a method that intensify with scintillation detector minimal X-rays passed through the chest and record with ratemeter-recorder system.

Thus recorded graphs represent mainly the changes of density of lung tissue due to respiration, but are influenced from various kinds of masses, which get in and out the field seen by the detector during respiration, e.g. tumor, greater blood vessels, heart, diaphragm, bone etc. Authors presented various patterns of curves.

If a tumor get in the field seen by the detector at inspiration and out at expiration, its curve is recorded as if that of paradoxical breathing. Observing the radiopulmonography comparing with the scintigram of lung by ^{131}I -MAA, authors pointed out some interesting correlations between ventilation and blood circulation in various pathologic states e.g. emphysema, tumor, chronic bronchitis, etc.

Combined use of radiopulmonography and ^{131}I -MAA scanning is a useful method of study of regional ventilation and circulation of lung, but for more precise study of regional function, further improvement of technic is expected.

An Experimental Study of the Bronchial Circulation in Dogs using RI (3rd Report)

—Determination of Bronchial Circulatory Flow in Various Chest Diseases—

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It is important for researchers of lung pathophysiology to make study of bronchial circulatory changes in pathological lungs. We have already made morphological study of bronchial circulatory changes in various chest diseases, by means of acrylic resin casts, postmortem angiography, and other roentgenological methods. This time, we have determined bronchial arterial flow (BAF), using indicator dilution method

(RISA as a indicator). We estimated BAF as the difference of left ventricular flow (LVF) and right ventricular flow (RVF). We calculated both LVF from dilution curves obtained from plotting of samples radioactivities, which were taken at regular intervals immediately after injection of indicator into the brachial vein, simultaneously from two cardiac catheters, one of these catheters was inserted into pulmonary artery via