

spectively with the emphysematous and bronchitic categories described by Burrows and others. In patients with bronchogenic carcinoma, the "hot" spot is seen at the site of bronchial compression or endobronchial tumor. When a tumor grows larger so that the bronchial lumen is occluded, the "hot" spot disappears with no aerosol deposited in the distal part of the lung, indicating the absence of an effective airflow.

Aerosol inhalation scanning is also useful in the estimation of differential ventilation in the animal experiments such as in the dogs. In the assessment of postoperative lung function in the canine lung

transplants, partial bronchial obstruction at the bronchial anastomotic site was indicated on the aerosol inhalation scan as a "hot" spot. The "hot" spot occurred transiently in allografts and autografts in the immediate postoperative period as a result of edema, at the time of rejection in allografts, and many months postoperatively in autografts as a result of bronchostenosis by scar formation.

In summary, a "hot" spot on aerosol inhalation scan is a useful sign indicating the presence of partial obstruction in the airway.

Lung Scintigram with ^{133}Xe

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Dynamic study of pulmonary function was performed with ^{133}Xe by scinticamera.

Breathing with a closed circuit and injecting ^{133}Xe gas in its circuit, after a single deep breath, scintiphoto was took during breath holding for 30 minutes (inhalation scintiphoto-gram). Then, after rebreathing for 3 to 5 minutes (rebreathing photograms), gas was washed out (wash-out photos). During all these phases, radio-activity of each lung was recorded as wash-in and

wash-out curve.

Abnormal pulmonary function were observed with these techniques and compared with perfusion scintiphotos and X-P.

This technique is especially useful for observation of cases with poor ventilation by means of obstructive disturbance in spite of normal X-P. (e.g. bronchral asthma, emphysema, lung cancer etc.)

A Study of $^{99\text{m}}\text{Tc}$ Aerosols and ^{133}Xe Gas Inhalation Scintigraphy

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Pulmonary inhalation scintigraphy was done, using $^{99\text{m}}\text{Tc}$ albumin and ^{133}Xe gas. $^{99\text{m}}\text{Tc}$ albumin aerosols were produced with ultrasonic nebulizer and were inhaled about 8 minutes. Immediately after completion of the inhalation procedure, scintigraphy was done.

^{133}Xe gas was inhaled with O_2 in spirometer.

Inhalation scintigrams of 90 patients were done,

47 tuberculosis, and 43 non-tuberculosis.

$^{99\text{m}}\text{Tc}$ aerosols inhalation scintigram patterns were classified four categories, Lung-field type, Bronchial type, Madara type, and Mixed type. The lung-field type, $^{99\text{m}}\text{Tc}$ aerosols deposition is homogenous in lung field. The bronchial type, aerosols deposite only in trachea and major bronchi. The madara type shows geographical