

in pulmonary interstitial edema but it retired in the fifth day, because of lymphaticovenous communication and/or collateral circulation.

(1) L. H. Ramsey; Circ. Research 15; 275, 1964.

(2) M. L. Pearce; Circ. Research 16, 482, 1965.

## Studies on the Regional Pulmonary Lymphodynamics

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The present study was designed to find a clinical method for indirect measurement of pulmonary lymphodynamics using radioactive iodinated serum albumin ( $R^{131}ISA$ ).

### Basic Studies:

Basic experiments were carried out on normal dogs.  $R^{131}ISA$  was injected into the lung percutaneously. Lymph samples prior to and at interval following a percutaneous injection of  $R^{131}ISA$  or  $Na^{131}I$  at lung were obtained from the thoracic duct or right lymph ducts by canulating at the junction of the internal and external jugular veins, and also blood samples were supplied from the femoral vein.

$R^{131}ISA$  of lymph and blood were measured by well type Scintillation Counter.  $R^{131}ISA$  injected into lung was slowly absorbed from lymphatic pathway whereas  $Na^{131}I$  was rapidly absorbed into blood stream.

### Clinical Application:

The two normal subjects, 20 pulmonary carcinoma patients, 5 lung abscess patients and one pulmonary tuberculosis patient were studied using this method.  $R^{131}ISA$  was injected into the lung percutaneously dose of 30~50  $\mu Ci/0.1$  ml.

Radioactivity in the injected area was measured after administration of  $R^{131}ISA$  1 hrs. 3 hrs, 6 hrs, 12 hrs and 24 hrs respectively.

The pulmonary absorption rate of  $R^{131}ISA$  was determined by radioactive curve in the administered area, and culculated on the value of one half ( $T_{1/2}$ ).

Absorption rate ( $T_{1/2}$ ) of  $R^{131}ISA$  in the injected area were, on the average, 19 hrs. in normal subjects, 15 hrs. in pulmonary carcinoma, 9.5 hrs. in abscess the lung, and 15 hrs. in pulmonary tuberculosis respectively.

$R^{131}ISA$  absorption curve of pulmonary carcinoma without carcinomatous pleurisy was different from that of pulmonary carcinoma with carcinomatous pleurisy. The absorption curves consist of one components exponential curve in the first case, and consist of two components exponential curve in the second case.

### Summary:

1)  $R^{131}ISA$ , percutaneously injected into the lung, entered mainly lymphatics. The pulmonary absorption rate of  $R^{131}ISA$  in injected area would likely be relative to regional lung lymph flow.

2) Absorption of  $R^{131}ISA$  from the lung in lung abscess was more accelerated than that in lung carcinoma.

3) In absorption curve of  $R^{131}ISA$  in lung carcinoma, there were different components with or without carcinomatous pleurisy.