AN EVALUATION OF GA-67 LUNG UPTAKE FOR PREDICTING THE PROGNOSIS OF INTERSTITIAL LUNG DISEASES. S. Fujishima, M. Kuroda, Y. Suzuki, M. Kanazawa, T. Yokoyama, T. Nishiguchi, A. Kubo, and S. Hashimoto. Department of Medicine and Department of Radiology, Keio University School of Medicine.

Ga-67 lung scintigraphy is routinely used to assess the "activity" of interstitial lung diseases (ILD). The method has not been established as useful in predicting the prognosis of ILD, although it may represent the degree of "alveolitis" in these disorders. We examined the clinical course in 30 patients with sarcoidosis, 24 patients with idiopathic pulmonary fibrosis (IPF), and 12 healthy controls, and quantified the degree of Ga-67 lung uptake (Visual Index VI) using the method by Line et al. (1978). The VI values increased in the patients with sarcoidosis (56±87: mean±SD) and IPF (88±52) as compared with the healthy controls (28±18). In patients with sarcoidosis, the VI values show no difference between subgroups classified with respect to pulmonary involvement or serum angiotensin converting enzyme (ACE) level. Serum ACE correlated well with the hilar uptake (r=0.80, p<0.001). No patients with sarcoidosis died during the observation period, but those with high VI values deteriorated clinically. In patients with IPF, the VI values were not different between subgroups of living (90±56) and deceased (88±52) patients in two years after the initial evaluation. In conclusion, we are unable to predict the prognosis of ILD from the Ga-67 lung uptake.

USEFULNESS OF ALVEOLAR PERMEABILITY ASSESSMENT OF PULMONARY EPITHELIAL PERMEABILITY IN INTERSTITIAL LUNG DISEASE - ANALYSIS OF AEROSOL DEPOSITION PATTERN IN THE LUNGS. M. Kanazawa, Y. Suzuki, A. Ishizaka, M. Kuroda, S. Fujishima, T. Yokoyama, T. Nishiguchi, Y. Okano, A. Kubo, and S. Hashimoto. Department of Medicine and Radiology, School of Medicine, Keio University, Tokyo.

The radioaerosol deposition pattern in the lungs and its effect on the assessment of pulmonary epithelial permeability was described. Tc-99m-DTPA (diethylene triamine penta acetate) aerosol scintigram was studied in 27 healthy nonsmokers, 15 smokers, 47 patients with pulmonary fibrosis (PF), and 10 patients with chronic obstructive pulmonary disease (COPD). The scintigraphic images were classified into 4 grades, 0: homogeneous distribution; 1: patchy distribution, 2: hot spots with partial defect, and 3: hot spots with little deposition in the lung field. The rate constant was used as a parameter for the pulmonary epithelial permeability. The rate constants were increased in the smokers and patients with PF. The nonsmokers, smokers and 36 patients with PF were classified to the grade 0 or 1, suggesting good aerosol penetration to the lung periphery. The patients with COPD showed the grade 2 or 3 and their rate constants were not elevated. It was suggested that the central airways should be analyzed because it might cause to underestimate the pulmonary epithelial permeability.

CHANG IN PULMONARY EPITHELIAL PERMEABILITY BY HISTAMINE INHALATION. Y. Suzuki, M. Kuroda, S. Fujishima, M. Kanazawa, T. Yokoyama, J. Sakurada, A. Kubo and S. Hashimoto. Department of Medicine and Radiology, School of Medicine, Keio University, Tokyo.

We investigated the effect of inhaled histamine on the pulmonary epithelial permeability estimated by using Tc-99m DTPA (diethylene triamine penta acetate) aerosol inhalation, and examined a quantitative relationship between the permeability and the airway responsiveness. Fourteen healthy nonsmokers were studied. The provocative concentration of histamine to decrease FEV1,0 more than 20% (PC20) was determined by inhaling from 0.1% to 3.2% histamine for 2 minutes. On the following day, pulmonary epithelial permeability was estimated from the rate constant (k, /min) of Tc-99m DTPA. The mean value for PC20 was 1.53±1.36%. The control kep value was 0.63±0.16 /min. On histamine inhalation, the kep value increased at the PC20. The kep value started to increase at the lower histamine concentration than the PC20. We could not find a dose-response relationship between the inhaled histamine concentration and the airway responsiveness. After the end of histamine inhalation, the kep values returned to the pre-inhalation level in several minutes. In summary, the inhaled histamine produced a rapid and reversible increase in the pulmonary epithelial permeability, but we could not detect a dose-response relationship.