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ESTIMATION OF VARIOUS LUNG DISEASE BY Xe-133 - NEW SOFT PROGRAM - M.Oshima,T.Tatezawa, H.Asakura,M.Akisada,K.Kimura,S.Hasegawa and M.Hosoba. Institute of Clinical Medicine, University of Tsukuba and Shimazu Seisakusho Ibaraki-ken and Kyoto.

The steady state measurement with Xe-133 using Ventilcon and scinticamera(Searle LFOV) combined with computer (Shimazu,Scintipac 230) has been performed to evaluate regional lung function of chronic obstructive lung disease (COLD).

The functional images of  $V, \dot{V}, \dot{Q}, MTT$  and  $V/\dot{Q}$  were obtained in each cases and the regional ratios of  $V, \dot{V}, \dot{Q}, MTT$  and  $V/\dot{Q}$  indices were also calculated for each lung fields divided into 6 zones.

This time we made a new soft program which can subtract back ground activity of soft tissue of the chest and also possible shows each profile image of regional area of  $V, \dot{Q}, MTT$  and  $V/\dot{Q}$ .

Back ground activity was decided by the histogram of soft tissue of chest and lung area. And soft tissue was also decided by the transmission image of the chest.

The following things were identified. Medium back ground activity was 11.6% in 6 patients. MTT was shortened 20 to 30 seconds by the back ground subtraction. Functional images of  $V, \dot{Q}, MTT$  and  $V/\dot{Q}$  didn't change in spite of back ground subtraction.

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A STUDY ON PULMONARY HILAR AND MEDIASTINAL LYMPHOSCINTIGRAPHY. K.Ushio,R.Onishi,K.Sugimura,T.Suematsu,Y.Takada,M.Matsuo,S.Nishiyama. Department of Radiology,Kobe University School of Medicine. Kobe.

A examination of pulmonary hilar and mediastinal lymphoscintigraphy is tried in 33 patients including pulmonary carcinoma. A method is as follows. 30-50 $\mu$ Ci of Au-198-Colloid(0.3-0.5ml)is injected through the needle of bronchofiber into the bilateral B8-B9 bronchi. In case of imflammatory diseases,one or more lymphnodes are visualized, but on the contrary in case of malignant diseases,only one or no lymphnodes are visualized,especially in case of involved lymphnodes.

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MUCOCILIARY CLEARANCE MECHANISM: EFFECT OF SMOKING CONDITIONS AND TIME FACTOR IN RECOVERY FROM THE ACUTE EFFECT OF CIGARETTE SMOKE. T. Hirano, T. Isawa, T. Teshima, A. Ebina and K. Konno. The Research Institute for Chest Diseases and Cancer, Tohoku University, Sendai.

The more cigarette smoked, the severer the acute damage on the mucociliary clearance mechanism in a dose response manner in the dog as reported previously (Jap. J. Nucl. Med., 16: 442, 1979). The purpose of the present study was to elucidate how difference in the smoking conditions effected the migrating velocity of a tracer material (Tc-99m MAA) which was placed on the carina of an anesthetized dog through a flexible bronchofiberscope and how long it took for the damaged mucociliary clearance mechanism to recover from the acute damage of cigarette smoke. The "moderate", "moderately severe" and "severe" smoking conditions were defined according to the difference in the dead space of the smoking instrument. The mean migrating velocity (MMV) of the tracer material was  $12.0 \pm 1.0$  mm/min (mean  $\pm$  S.E.M., n=17) in the normal control dogs. When five cigarettes were smoked under the "moderate", "moderately severe" and "severe" smoking conditions, the MMV's were  $7.5 \pm 1.9$  mm/min (n=6),  $3.3 \pm 0.8$  (n=14) and  $1.4 \pm 0.3$  (n=8), respectively. After smoking five cigarettes under the "severe" smoking condition, the MMV's were  $1.9 \pm 1.2$  mm/min (n=10) at 2,  $1.9 \pm 0.3$  (n=8) at 48 hours,  $6.6 \pm 1.1$  (n=10) on the 7th and  $15.3 \pm 1.6$  (n=10) on the 14th day. When the airway mucosa is exposed to a cigarette smoke, the mucociliary clearance mechanism is acutely damaged not only in a dose response manner but also as the smoking condition becomes more severe. It takes from one to two weeks for the damaged mucociliary clearance mechanism to recover from the acute effect of a cigarette smoke.

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DIFFUSE BILATERAL PULMONARY ACCUMULATION OF Ga-67 CITRATE. K.Watanabe,K.Kawahira,H.Hoshi,H.Yamada and Y.Ichiya. Department of Radiology. Miyazaki Medical College and Kyushu University School of Medicine. Miyazaki and Fukuoka.

Gallium chest images of 257 patients (278 examinations) were analysed for the diagnostic significans of diffuse bilateral pulmonary accumulation of gallium in conjunction with chest radiograph. These findings were founded in 16 patients with various malignant and benign diseases. Eight out of these 16 patients were able to explain the accumulation because of their abnormal chest radiographs. This group consisted of 3 patients with primary lung cancer, 2 with lung metastases, 1 with silicosis, 1 with sarcoidosis and 1 with pneumocystitis carinii infection. The primary lung cancer was all the type of alveolar cell carcinoma and the lung metastases was all the type of lymphangitis carcinomatosa. In the patient with uveitis who had been given steroids for the treatment, autopsy revealed the diffuse pulmonary infection of pneumocystitis carinii. And the other 8 patients had no evidence of diffuse pulmonary diseases on the chest radiographs. This group included 5 patients with malignant lymphoma, 2 with lung cancer and 1 with lung inflammation. Radiographically invisible lymphomatous infiltration, low-grade subclinical infectious processus and toxic effect of the anticancer drugs were probable responsible for these abnormal pulmonary accumulation of gallium.