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COMPARISON OF REGIONAL VENTILATION INDICES OBTAINED BY SPIROMETRIC NON-GATED AND GATED METHODS. Y.Yagi,K.Gotoh,S.Ohsima,M.Osamura, M.Iida,S.Hirakawa. The 2nd Depart. of Medicine, Gifu University School of Medicine.

The distribution of the regional pulmonary ventilation and perfusion has been measured using the radionuclide. However, there is a possibility that the indices, which are measured by conventional method, may be extremely affected by the respiratory movement, especially in lower lung field. Therefore, we compared the values of the indices obtained by the spirometric gated method with those obtained by the non-gated method. The indices were obtained as follows :ventilation ($\dot{V}$) was obtained by inhaled Xe-133 gas after 3 breaths and volume (V) was obtained by equibilium phase,and static ventilation indices ($\dot{V}/V$) were calculated. Perfusion image($\dot{Q}$) was obtained after injecting Xe-133 intravenously. Washout clearance rate(dynamic $\dot{V}$) was calculated by using Height/Area method. Every index was obtained by gated and non-gated methods in each lung field, which was divided into 9 ROI from base to apex.The results were as followes: (1)In the static $\dot{V}$, there was statistically insignificant difference between the gated and non-gated method.(2) In the dynamic $\dot{V}$,the indices of the gated method tended to be smaller than that of the non-gated method in the area of the base.(3) The index of dynamic $\dot{V}$ of gated method in the base was similar to that of static $\dot{V}$ of both gated and non-gated methods.

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EXPIRATION FRACTION AND PHASE ANALYSIS OF RESPIRATORY MOVEMENTS OF THE LUNG USING RESPIRATORY GATED TRANSMISSION LUNG IMAGING. M.Seto,K.Nakajima,N.Tonami,H.Bunko,T.Aburano,I.Nanbu,H.Seki,and K.Hisada. Kanazawa University,Kanazawa.

Respiratory gated transmission lung imaging was performed to evaluate that if there is any relationship or not between the changes of air content in lung and the changes of the counts in lung according to respiratory movements. Triggered at the beginning of expiration by thermosensor,the data was acquired into 24 frames per one respiratory cycle. Serial images of 200 msec interval was made from the data acquisition for 120 sec.

We calculated "Expiration Fraction"(EF) from the lung counts curve. We also calculated EF according to the actual changes of air content in lung using a spirometer.

EF calculated from tansmission lung imaging and from spirometer showed good corelation ($r=0.94$).

The phase image showed even phase distribution and the amplitude image showed the high amplitude area at the basal lung in normal subjects.

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AEROSOL LUNG INHALATION SCINTIGRAPHY IN NORMAL SUBJECTS. O.Sui, H.Takeji, H.Shimazu and N.Watanabe. Department of Radiology, School of Medicine, Tokushima University, Tokushima.

We have performed aerosol lung inhalation scintigraphy with Tc-99m millimicrosphere albumin (milli MISA). We reported basic and clinical evaluation of it and concluded aerosol lung inhalation scintigraphy with Tc-99m milli MISA was easy to perform and was useful for routine examination.

But central airway deposit of aerosol particles was found in not only the patients with chronic obstructive pulmonary disease but also normal subjects and we sometimes confused with them. So we performed aerosol lung inhalation scintigraphy in normal subjects and their scintigrams were compared with the lung function tests.

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CLINICAL SIGNIFICANCE OF THE VENTILATORY LUNG MOTION IMAGE. T.Fujii,J.Hirayama, T.Kanbayashi,K.Handa,S.Kusama,K.Yano, H.Hirano and M.Masaomi.Shinshu University School Of Medicine, Nagano.

Using the both perfusion lung images with Tc-99m MAA at inspiration (I) and expiration (E), lung motion image, in which the changes of the radioactivity of Tc-99m MAA during ventilation ((E-I)/I) were represented in each pixels, was obtained in various respiratory diseases.

Total value of (E-I)/I in the both lungs, which correlated with vital capacity, was 205.31±47.50 in healthy one, 102.64±50.13 in diffuse interstitial pneumonia, 97.42± 50.68 in primary lung cancer and 60.46± 25.58 in diffuse panbronchiolitis. Right lung/Left lung ratio of (E-I)/I (V) was correlated with that of the radioactivity in the inhalation image of Kr-81m, but not with that of the radioactivity in the perfusion lung image (P).

Abnormal value of V/P was shown in 44.0% of cases with pleural disease, 17.4% of diffuse interstitial pneumonia, 43.1% of primary lung cancer and 50.0% of diffuse panbronchiolitis. In the regional areas, the relationship between perfusion and lung motion ((E-I)/I) was matched in many cases, but mismatch of it was not uncommonly observed.

The ventilatory lung motion image combining with the perfusion image seems to be useful in estimating of the regional perfusion and lung motion.