

393

PULMONARY PERFUSION SCINTIGRAPHY IN 106 CASES OF ADVANCED AGE
T. Takahashi, K. Morita, *T. Matsushima
Department of Radiology, Sapporo Medical College and *Department of Nuclear Medicine, Aizen Hospital, Sapporo

We evaluated pulmonary perfusion and ventilation studies in 106 cases of advanced age from 65 to 95 years old (cardiac disease; 36 cases, cardiac disease with chronic obstructive pulmonary disease (COLD); 12 cases, COLD with another pulmonary disease; 58 cases). 88/106 (83%) cases showed segmental or lobar perfusion defect. In 74/106 (70%) cases fissure signs are positive and 81% of these cases fissure signs were recognized in the both right and left lungs. In 47/58 (80%) cases with COLD and another pulmonary disease, fissure signs were also positive. Even in many cases whose pulmonary perfusion scans showed COLD, blood gas analysis was in the normal range and in the chest x-ray examination abnormal findings were not detected. We suspected that the cause of fissure signs as decreasing of pulmonary blood flow to peripheral area of lung lobes or segments.

394

STUDY OF PULMONARY PERFUSION IN CARDIOVASCULAR DISEASES. T. Fujii, J. Hirayama, T. Kanbayashi, M. Hongo, S. Ookubo, S. Kusama, K. Yanao, H. Ueda and M. Takizawa. Shinshu University School of Medicine, Matsumoto.

On perfusion lung scintigram of patients with heart disease, hyperperfusion area is observed in the upper anterior lung field. So, semiquantitative estimation of regional pulmonary perfusion in the right lateral image as well as the left lateral, anterior and posterior image, was examined in 52 controls and 199 cases with cardio-vascular disease.

In the right lateral image, twelve regions of interest were setted, and counting ratios of the each region to the lower posterior region were calculated. The value of the upper anterior region (A2, A2/P2) was correlated with pulmonary artery wedge pressure, pulmonary artery mean pressure and pulmonary vascular resistance better than that of the other regions. A2 and A2/P2 were 1.01 ± 0.31 , 0.86 ± 0.20 in control, 1.48 ± 0.56 , 1.20 ± 0.29 in NYHA class 3, 2.26 ± 0.98 , 1.38 ± 0.35 in NYHA class 4, 1.62 ± 0.75 , 1.23 ± 0.33 in left heart failure, 1.62 ± 0.74 , 1.12 ± 0.34 in mitral valvular disease, 1.32 ± 0.55 , 1.05 ± 0.35 in aortic valvular disease and 1.33 ± 0.82 , 1.14 ± 0.29 in myocardial infarction.

It seems that redistribution pattern of pulmonary perfusion in the right lateral image reflects pulmonary hemodynamics better than that of the other images.

395

PULMONARY EMBOLISM AFTER CARDIAC CATHETERIZATION. H. Otsuka, K. Ojima, T. Tsuda, Y. Arai, A. Shibata, M. Kimura, I. Odano and K. Sakai. Niigata University School of Medicine, Niigata.

We performed lung perfusion scintigrams before and after catheterization in consecutive 11 patients. Both right and left heart catheterization were performed using percutaneous femoral approach with catheter introducer. After removal of all catheters, manual compression was carried out, and after having confined that the hemostasis completed, 2 kg sand-bag was placed on the groin for 6 hours and each patient was then confined to complete bed rest for about 24 hours. Of 11 patients, 5 patients (45%) demonstrated new pulmonary perfusion defects on the day following catheterization, but these defects disappeared within a week. None of 5 patients with pulmonary embolism were symptomatic, and there were no changes in Chest X-ray films, spirogram or blood chemistry. Frontal plane QRS axis showed the right axis deviation more than 30 degrees in 2 cases. And arterial PO2 showed significant decline by more than 10 mmHg in 3 cases. Duration of manual compression was significantly longer ($p < 0.05$) in patients who developed new perfusion defects. New perfusion defects could develop without right heart catheterization in 1 case. These data suggested that the prolongation of compressing the puncture site and/or subsequent hematoma caused by technical failure may be an important factor in the development of pulmonary embolism.

396

STUDIES OF LUNG FUNCTION IN PATIENTS AND CHILDREN USING Xe-133 AND Tc-99m MAA. K. Kihara, T. Iwa, H. Bunko and K. Hisada. Kanazawa University, Kanazawa.

A new pulmonary function test for infants and children was devised using simultaneously Xe-133 ventilation scanning and Tc-99m MAA perfusion scanning. A circulating closed-circuit with a small total volume of 3 liters was developed for ventilation scanning. Distribution of regional ventilation in six zones of the lung was quantitatively assessed during inhalation and wash-out phase of Xe-133 administered at a dose of 5 mCi. Distribution of lung perfusion was also estimated after intravenous injection of 1-3 mCi of Tc-99m MAA. Clinical usefulness of the method was evaluated in 71 children with various cardio-pulmonary diseases. Of these, 34 cases were under 2 years old. In patients with VSD associated with pulmonary hypertension, a marked regional decrease in ventilation and perfusion was observed. The impaired function was improved after radical operation, suggesting that it was mainly due to the stricture of the air way and reversible change. In children who had received a lobar or partial lung resection, decreased ventilation and perfusion persisted for a long time after operation. The reduction was more prominent in patients of lobectomy than in those of partial resection and did not appear to be affected by operated age and post-operated days. This pulmonary function test proved to be a useful procedure for the assessment of pulmonary function in infants and children.