

Summary

Comparison of ^{133}Xe Gas Dynamic SPECT and Thin-Section CT in Patients with Pulmonary Emphysema

Kazue TAKAHASHI, Katashi SATOH and Motoomi OHKAWA

Department of Radiology, School of Medicine, Kagawa Medical University

[Purpose] We assessed ^{133}Xe gas dynamic single photon emission computed tomography (SPECT) by comparing washout axial images with thin-section CT (TSCT) in patients with pulmonary emphysema. **[Methods]** Twenty-three patients were studied. All patients were diagnosed as having pulmonary emphysema on the basis of TSCT. We compared TSCT of upper, middle and lower lung fields with ^{133}Xe gas dynamic SPECT axial images at the corresponding levels during the 3 to 4 minutes of washout phase. If the degree of ^{133}Xe gas retention or TSCT finding of ventral and dorsal parts was not the same, the images were divided into two parts. **[Results]** A total of 174 lesions in 23 cases were examined, but 3 lesions having no retention of ^{133}Xe gas at equilibrium phase were excluded. The results showed that: there were 37 lesions (21.6%) with equivalent severity on both im-

ages; there were 42 lesions (24.5%) with more severity on ^{133}Xe gas dynamic SPECT than on TSCT; and there were 92 lesions (53.8%) with more severity on TSCT than on ^{133}Xe gas dynamic SPECT. The severity on ^{133}Xe gas dynamic SPECT and TSCT was not always compatible. One of the reasons for the variable ^{133}Xe gas retention even when the lesion had the same severity on TSCT, may be bronchial stricture which cannot be seen on TSCT. **[Conclusion]** By comparison of axial images of ^{133}Xe gas dynamic SPECT with CT images, we could recognize the areas of ^{133}Xe gas retention in detail. Results suggest that ^{133}Xe gas dynamic SPECT can be useful to identify ventilation impairment in pulmonary emphysema.

Key words: ^{133}Xe gas dynamic SPECT, Pulmonary emphysema, Thin-section CT.