Summary

Regional Assessment of Treatment in Lung Cancer Using Lung Perfusion and Ventilation Images

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In 30 patients with lung cancer undergoing non-surgical treatment, we performed perfusion lung imaging using ^{99m}Tc-MAA and inhalation lung studies using Technegas before and after treatment and evaluated regional perfusion and ventilation status in the lung regions where bronchogenic carcinoma was located. Regional ventilation status was preserved rather than perfusion counterpart (V＞P) in 18 patients (18/30＝60.0%) before treatment, while the former was better than the latter in 27 patients (27/30＝90.0%) after treatment, indicating that regional ventilation status improved more significantly than regional perfusion counterpart after treatment ($p=0.005$). We also classified the therapeutic effect for regional perfusion and ventilation status as improved, unchanged, or worsened, respectively; improvement in regional perfusion status was observed in 17 patients (56.7%) and that in regional ventilation status in 24 patients (80.0%). There was a statistically significant correlation between improved regional perfusion and ventilation status ($p=0.0018$) when therapeutic effect was recognized. The patients who showed improvement in regional perfusion status after treatment always showed improved regional ventilation status, but 7 patients showed either unchanged or worsened regional perfusion status after treatment, although regional ventilation status was improved.

In conclusion the pulmonary vascular beds seem more vulnerable to bronchogenic carcinoma and improvement in regional perfusion status was revealed to be more difficult than that in regional ventilation status after treatment.

Key words: Lung cancer, Chemotherapy and radiotherapy, Perfusion, Ventilation, Technegas.