

## Clinical significance of ventilation/perfusion scans in collagen disease patients

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The purpose of this study was to detect disturbances in pulmonary circulation in collagen disease patients by means of a non-invasive technique. **Methods:** Ventilation/perfusion scans with  $^{133}\text{Xe}$  gas and  $^{99\text{m}}\text{Tc}$ -macroaggregated albumin (MAA) were performed in 109 patients with various collagen diseases. Functional images of V, Vol, Q and V/Q ratio were obtained at total lung capacity. Wash-out time was calculated from the wash-out curve. Whole body scans were performed in 65 patients to evaluate intra-pulmonary shunts. **Results:** Increased V/Q areas were observed in 74 patients (67.9%), suggesting some impairment of pulmonary perfusion. Decreased perfusion, probably due to vasculitis or intravascular microcoagulation, was observed often, even in patients without pulmonary fibrosis. Shunt ratios over 10% were observed in 8 of the 65 patients (12.3%), indicating formation of PA-PV shunts secondary to peripheral vascular impairment. Wash-out time was prolonged in 37 patients (33.9%), shortened in 18 (16.5%), and within the normal range in 54 (49.6%). The prolonged and normal wash-out times in the patients with pulmonary fibrosis may represent obstructive changes in the small airways superimposed on the fibrosis. **Conclusion:** Ventilation/perfusion scans are a very useful tool for evaluating collagen lung diseases, and they might contribute to treatment decisions for the patients.

**Key words:** ventilation/perfusion, collagen disease, pulmonary fibrosis, pulmonary hypertension, pulmonary shunt