

Pulmonary Perfusion and Ventilation Abnormality in Kyphoscoliosis

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It is well known that pulmonary functions become more abnormal with aging in kyphoscoliosis. However, regional pulmonary perfusion and ventilation are already abnormal in this disease even in young patients are reported by Shannon.

For the purpose of preoperative evaluation and postoperative follow-up, we attempted radioisotope pulmonary perfusion and ventilation studies on nine such patients (idiopathic kyphoscoliosis; 8, congenital kyphoscoliosis; 1). Pulmonary perfusion study was done either by the intravenous injection of ^{125}I -MAA (4 cases) or ^{131}Xe in saline (3 cases), while for the pulmonary ventilation study, inhalation of either $^{99\text{m}}\text{Tc}$ colloid (5 cases) or ^{133}Xe gas (4 cases) was used.

Out of 7 patients studied, normal pulmonary perfusion was seen in only one (N.M. 17 year old female, idiopathic kyphoscoliosis, Cobb's angle; 57 degrees). The abnormal decrease of

pulmonary perfusion was observed on the convex side in 5 out of 6. The only patient who had decreased pulmonary perfusion on the convex side had history of pyothorax several months after birth of the same side (F.E. 10 year old female, idiopathic kyphoscoliosis, Cobb's angle; 44 degrees). In 3 patients who had ^{133}Xe bolus injection study, regional perfusion defects were also observed in the mid-lateral zone of the concave side.

In all patients who had ^{133}Xe washout study (4 cases), retention of ^{133}Xe was observed at the base of the concave side.

The distribution of inhaled $^{99\text{m}}\text{Tc}$ colloid or ^{133}Xe gas was abnormal in 8 out of 9 patients and the patterns were similar to those of pulmonary perfusion in general.

By extending this study, we are expecting to know whether surgical correction can improve such regional pulmonary perfusion-ventilation abnormalities.