

- ^{81m}Kr -generator is high in proportion to eluting speed at 1.94~19.7 ml per minute, but is almost same at 1~4l per minute.
- 4) Effect of ^{81}Rb on lung images using Scintillation Camera is not observed, when generator is located at the side of detector.
 - 5) Perfusion images obtained with ^{81m}Kr is less apparent than ones obtained with ^{99m}Tc -MAA in the same patients.
 - 6) Rebreathing method is more stable than single breath holding method for ventilation lung images.
 - 7) The method, that performs perfusion study using ^{99m}Tc -MAA and ventilation study using ^{81m}Kr at the same time, is most available for clinical application.
 - 8) Inhalation washout study using ^{81m}Kr is no significant for clinical application.

Pulmonary Ventilation Studies of Asthmatic Children with Kr-81m

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Krypton-81m gas was eluted from the ^{81}Rb — ^{81m}Kr generator by using compressed air as an eluting agent. The continuous inhalation of mixed gas of ^{81m}Kr and air with a scintillation camera produced the pulmonary image of which activity was proportional to regional ventilation. Because of short half life of ^{81m}Kr (13 seconds), the exhaled gas was not necessary to be trapped by the charcoal filter, and the several pulmonary views of a patient could readily be available in a short period of time. The great advantage of ^{81m}Kr generator was found in use for the studies of small children who were not usually cooperative to the medical examination. Thirty two patients with bronchial asthma of any state were so far studied. Their ages ranged from 3 to 13 years old. Studies revealed the definite ventilation defects in the scans of patients with asthmatic attack. Re-scans right after the medications such as the use of bronchodilators showed

marked improvement of the ventilation defects. Exercise induced asthma (EIA) can be easily identified by the ^{81m}Kr ventilation study. After the medicines for EIA such as a disodium cromoglicate was administered to the patients, next exercise did not produce the ventilation defects, and the preventive effect can be objectively examined for each patient.

The ^{81m}Kr ventilation study is now being used for identifying the provocative substances of bronchial asthma. The house dust of several densities were inhaled with ^{81m}Kr gas by the patient.

The threshold dose of disclosing the ventilation defects in the scans was remarkably less than that of provoking the symptom of asthmatic attack. The sensitive ^{81m}Kr ventilation study could be another provocative test which does not induce the real asthmatic attack.

Studies on the Spirometry and Regional Ventilatory Function in Patients with Bronchial Asthma

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Comparison between spirometry and regional pulmonary ventilatory function at an asthmatic condition and at a clinically symptom-free condi-

tion was studied in thirteen patients with bronchial asthma.

In order to estimate the regional ventilatory