81mKr-generator is high in proportion to eluting speed at 1.94~19.7 ml per minute, but is almost same at 1~41 per minute.

4) Effect of 81Rb on lung images using Scintillation Camera is not observed, when generator is located at the side of detector.

5) Perfusion images obtained with 81mKr is less apparent than ones obtained with 99mTc-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 99mTc-MAA and ventilation study using 81mKr at the same time, is most available for clinical application.

8) Inhalation washout study using 81mKr is no significant for clinical application.

Pulmonary Ventilation Studies of Asthmatic Children with Kr-81m

Guio UCHIYAMA*, Noboru ARIMIZU**, Toshiko HONTA** and Kazuo SUGIMOTO***

*Department of Radiology, Chiba University Hospital

**Department of Radiology, Chiba University School of Medicine

***Department of Pediatrics, Chiba University School of Medicine

Krypton-81m gas was eluted from the 81Rb—81mKr generator by using compressed air as an eluting agent. The continuous inhalation of mixed gas of 81mKr and air with a scintillation camera produced the pulmonary image of which activity was proportional to regional ventilation. Because of short half life of 81mKr (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 81mKr 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 81mKr 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 81mKr ventilation study is now being used for identifying the provokative substances of bronchial asthma. The house dust of several densities were inhaled with 81mKr 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 81mKr ventilation study could be another provokative test which does not induce the real asthmatic attack.

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

T. TAKEDA, Y. NISHIMOTO, A. KISHIMOTO, O. KITADA, M. SUGITA,
K. HYODO, A. NISHIKAWA and K. TACHIBANA

Department of Internal Medicine and Radioisotopes, Hyogo Medical College, Nishinomiya

Comparison between spirometry and regional pulmonary ventilatory function at an asthmatic condition and at a clinically symptom-free condition was studied in thirteen patients with bronchial asthma.

In order to estimate the regional ventilatory...