

PROVOCATION TEST WITH ^{81m}Kr IN BRONCHIAL ASTHMA OF CHILDREN

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Krypton-81m ventilation study was used for the provocation test in bronchial asthma of children. Freeze-dried house dust, diluted into 20 ml saline solution and nebulized, was continuously inhaled with ^{81m}Kr gas by a patient. Posterior views of both lungs were successively recorded and stored in the data processing system hooked to the PHO/GAMMA III scintillation camera. Time-activity curves of whole lungs or of the areas of ventilation defects were produced by ROI method. When ventilation defects appeared in the persistence scope, house dust inhalation was discontinued without cessation of the lung imaging with ^{81m}Kr . Clinical asthmatic attack was not occurred at this time. The ventilation defects gradually increased in size and grade afterwards, and then they improved. No clinical symptom was provoked at all for the entire period of test. The patient's sensitiveness to the provocative substance was expressed by the sensitivity index, calculated by the dose of house dust inhaled and the decreasing rate of the ventilation index derived from the time-activity curve. The method developed seems to promise a safe and quantitative provocation test.

SINGLE PHOTON RCT IMAGE USING GAMMA CAMERA
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We got single photon RCT image using conventional gamma camera, minicomputer for the exclusive use of nuclear medicine (CDS-4096), magnetic tape and medium computer Facom 230-28S (48k) for general use.

To reconstruct the RCT image, we used the convolution method by Shepp while the correction of absorption was done by using of geometric mean or geometric mean considering the thickness.

Each patient was administrated 15 mCi of $^{99m}\text{TcO}_4^-$ for brain image and practical examination was performed by rotating patient using the revolving chair and simple device which settle the center of patients head. In some patients with normal brain and with brain tumor RCT images were reconstructed by Facom and displayed on CRT of CDS.

We suppose that our RCT image is well for clinical use and contribute to diagnosis of three dimensional extension of brain tumor.