V. Lung

Pulmonary Scintigam of Bronchial Asthma
(Classification of scintigrams of children with bronchial asthma)

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Pulmonary perfusion scintigraphy is a simple, safe and useful method in determining the disturbance of the arterial blood flow, especially in the cases of children. The scintigram often indicates impairment of the pulmonary arterial blood flow which can not be suspected by the conventional chest X-ray film.

Remarkable changes have been observed in the lung scintigram in the cases of bronchial asthma, in acute attack. We have investigated about 70 patients, who were suffering from asthmatic attack, by pulmonary scintigraphy.

All scintigrams which were taken during attacks showed some abnormalities.

In the symptom-free periods, most of the scintigrams were found to be normal, however some of them showed abnormalities.

It was observed that the defects of repeated attacks in one patient were not always in the same regions, that is, in each attack the localization of disturbances in the blood flow was not constant.

All scintigrams taken during attack could be divided into five different types: I. multiple, II. single, III. mixed, IV. complete unilateral, V. non focal lesion (diffusely decreased) type. The most frequent type is multiple, bilaterally, and about 40 percent of all.

Scintigram of Bronchial Asthma

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Localization and extension of the blood flow impairment in the infantile asthatic patient were determined by MAA scintiphoto in comparison with the phantom experiment. The impairment was studied in relation to severity of the attack and history of the patient.

1) The impairments were revealed most frequently in segment of upper and lower parts of the lung and rarely in dorsal middle parts.

2) Severity of the attack and distension of impairment were well correlated in slight and moderate attack including in remission, though it was not the case in severe attack remaining some discrepancies to be elucidated.

3) Numbers and distension of lesion which
increased according to the duration of the history were observed in remission. However, contrary to the lesion in remission, in slight and moderate attacks, distension of the lesion was decreased with the duration of the history, suggesting the possibility of healing of the lesion revealed in slight and moderate attack.

No correlation between the distension of the lesion and the history in the patient suffering from severe and successive attacks suggested the possibility of the disease becoming chronic in these patients.

**Lung perfusion scan in aortitis syndrome**

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It has been well documented that there are cases in aortitis syndrome where pulmonary arteries are also involved. We have performed $^{131}$I MAA perfusion lung scan on 21 cases of aortitis syndrome (male; 2, female; 19). All of them were worked up completely and aortography was done in each to confirm the diagnosis.

Thirteen non-cardio-respiratory cases were chosen as normal control group. $^{131}$I MAA 0.2 mCi was injected intravenously while patients were lying supine and lung scan was done. Dots were counted in the each side of the lung at the level of costo-sternal junction of second rib (upper zone), third rib (middle zone) and forth rib (lower zone) 10 cm. wide horizontally. Count ratios were obtained in the each zone (right to left), and 99.9% confidence interval was calculated from the normal group (Student's t). The intervals thus obtained were defined as normal. In the upper zone and middle zone, the normal ranges were between 0.82 and 1.16, 0.92 and 1.27 respectively, but in the lower zone the scattering of the ratios were so wide that the calculation of the confidence interval was not done.

Dot countings and the right to left count ratios were also obtained in the same way in the aortitis group and those who had the ratio outside the normal range were defined as abnormal.

Out of 21 cases 15 were abnormal (71.4%). In 9 cases the perfusion was decreased in one side of the lung diffusely (left lung; 7, right lung; 2). In 6 cases the decrease of perfusion was limited to the upper zone (left upper zone; 2, right upper zone; 4). Chest X-ray films were also reviewed in each cases. There was no significant tuberculous lesions in the films except in one case where pleural thickening and old tuberculous scar was identified in the left apex.

The abnormality of lung perfusion scan and that of pulmonary vasculatures does not correlate necessarily, but our findings suggest that there exists a high incidence of some pulmonary involvements in aortitis syndrome.