

II. Malignant Tumor

Evaluation of the Tumor Scanning by ^{67}Ga -Citrate

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The subject of study: Cases at Ohkubo Municipal Hospital during the past year; lung cancer, 30; ^{60}Co irradiated lung cancer, 4; lung metastasis of malignant tumor of other organs, 5 (uterine cancer, breast cancer, esophagus cancer, malignant goiter, unknown case); pneumonia, 2; pulmonary tuberculosis, 3; sarcoidosis, 1; malignant lymphoma (mediastinum), 1; radiation pneumonia, 1; unknown case, 5; total 51 cases.

The methods of study: We scanned most of the cases 48 hours after the injection of 2 mCi of ^{67}Ga -citrate. As for equipment, we used 3" \times 2" crystal and 19 hole collimator, measured all the γ -rays over 80 Kev, and expressed them by photoscan.

The results of study:

1) All 30 cases of lung cancer, showed the clear positive image, especially in mediastinum and at the back of heart shadow. When it is difficult to reflect by chest x-ray, when the tumor can not be seen because of the retaining of hydrothorax, and when lung cancer or malignant lymphoma metastasized into mediastinum, this result gives the useful information for the diagnosis of the location and the scope and for the decision of the right position of x-ray therapy.

2) In case of ^{60}Co irradiated lung cancer,

as the absorbed dose increases, the positive image gradually becomes vague, but there are a few cases which show light positive image even at 5000-6000r.

3) The cases of lung metastasis of other organ cancer or lymphonodes metastasis of lung cancer also show clear positive image.

4) ^{67}Ga -citrate, however, frequently shows positive image not only in case of tumor diseases but also in case of inflammation when it is acute or subacute, or in active period or exudative period, e.g. bronchial pneumonia, pulmonary purulence and active pulmonary tuberculosis.

5) The case of sarcoidosis also shows clear positive image and it is difficult to differentiate from malignant lymphoma.

6) ^{67}Ga -citrate describes the focus of lung cancer clearer and in higher percentage than any other nuclide, thus gives much useful information. But since it is intaken in case of inflammation according to the time and condition of the disease, it is not suitable for the differentiation of malignant tumor and inflammatory diseases. The problems still remain for its clinical application and its evaluation, and we find it necessary to continue our research of the cases.