

Diagnosis of the Breast Tumor with a Catheter-Type Semi-Conductor Radiation Detector

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A catheter-type semi-conductor radiation detector, devised by Dr. Iio and Mr. Takayanagi, has been applied for the diagnosis of the breast tumor. The detector is as thin as 2 mm. in diameter and as flexible as the cardiac catheter is. The detectability of the detector recently becomes wider as before.

The patient with breast tumor had ^{32}P 400 i.m. injected previously before 3-24 hours. The detector is put through into tumor itself or in its vicinity by means of puncture needle, which can afford the detector tight contact with tumor. We assumed herein that the radioactivity of tumor is expressed by the ratio of ^{32}P uptake in between tumor and normal tissue. Thus, the radioactivity of tumor is stipulated as follows: the ratio is,

less than 1.29, (—)
1.30-1.39, (±)
more than 1.40, (+)

Ten patients undergone the detector examination were reported here. Of 10 cases, 9 cases had correct diagnosis made, including, histologically, 8 cases of mastopathy and 2 cases of carcinoma. One false diagnosis was given to a patient with mastopathy, namely false positive.

The detector has the following characteristics that the diameter is as thin as permits us to make tight contact with tumor and that the determination whether tumor ^{32}P uptake is high or not can rapidly be made.

We have convinced that the catheter-type semiconductor detector might be more useful for the diagnosis of malignancy of the breast tumor as compared with other auxiliary methods available to the breast tumor.

Studies on endolymphatic radiotherapy with ^{131}I -lipiodol of malignant lymphoma

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1. Fundamental studies: Fifteen dogs were used in the present experiment. a) Organ distribution of ^{131}I -Lipiodol: The concentration of this material was remarkably high in the lymph nodes in comparison with that in other organs and remained so for the following 4 weeks. The lungs also showed a relatively high concentration, which was, however, rapidly diminished in 2 to 4 weeks. There was a trace of the material in the liver, spleen, and thyroid. b) Circulation of ^{131}I -Lipiodol into the blood stream: When measured by the method of thoracic duct cannulation, 35 to 45% of the amount administered and

65% are excreted in 6 hours and 12 hours, respectively. c) Histological examination: In contrast to the lymph nodes injected with the non-radioactive contrast material, those injected with the radioactive oil showed lymphocyte damage and nucleophagia by the phagocytes as well as emergence of large mononuclear and polymorphonuclear leukocytes, indicating a marked destructive effect on the lymphocytes at the early period. After 5 days these changes were followed by the depletion of the lymphoid element and an increase of the connective tissue element.

2. Clinical studies: Two patients with re-

ticulum cell sarcoma and 1 patient with chronic lymphocytic leukemia were injected with 35 mCi of ^{131}I -Lipiodol on either side of the legs and followed for the diminution of the size of the enlarged lymph nodes. The lymph node diminution curves were essentially the same in all the three cases; the rate of diminution was 50% after 2 weeks and 60%

after one month. In view of the minimal side effects, this method of treatment of malignant lymphomas was considered to be a very useful one. Furthermore, interesting results were obtained with respect to the linear scanning, scinticamera, and excretion of ^{131}I into the urine and feces.