Serial Angioscanography of Tumor by Means of Intraarterial Injection of Macro-aggregated Albumin (MAA)

M. KANEKO and C. KIDO
Dept. of Diagostic Radiology
T. SUCHI
Dept. of Pathology, Aichi Cancer Center Hospital
T. SASAKI
Dept. of Radiology, Nagoya University School of Medicine, Nagoya

Summary:

Eighty-four of neoplastic and 21 cases of non-neoplastic disease, that is 105 cases in total, were subjected to study. Percutaneous selective arteriography was performed by means of Seldinger's technique using Oedman's catheter and MAA was injected into the arteries through the catheter. Attempts were made to inject branches of artery that include the vascular bed of the aumor or region of interest. The dose was 100 to 250 μCi for carotid and bronchial arteries, and 500 to 50000 μCi for other arteries. Immediately after the injection the distribution of MAA was ascertained by linear and area scanning. Scanning was repeated daily until the tumor was positively delineated or at least 1 to 2 week if this did not occur. After injection, non-radioactive iodine was given to saturate the thyroid gland.

MAA Test was evaluated as positive (+), if the positive scintigraphy was obtained over the tumor; however, MAA Test as negative (−), if the area of interest was the same as the surrounding background.

In neoplastic disease, 66 of 84 cases were positive (79%) and 16 of 21 cases of non-neoplastic disease were negative (76%). The time to obtain the positive scintigraphy of tumor in 66 positive cases of neoplastic group was as follows: 14 cases immediately after injection (21%), 19 cases in one day (29%), 19 cases in 2 days (29%), 9 cases in 3 days (13.5%) and 5 cases in 4 days (7.5%).

The differential absorption ratio of neoplastic and normal tissues, comparison of counts per gram of each tissue, measured by well-type scintillation counter, was 2 to 30 times higher in neoplastic tissue than normal.

The result of MAA Test suggests that non-neoplastic cases are possible to differentiate from the neoplasm significantly.

Tumor Deposit of ^{131}I-MAA by Arterial Infusion

D. ISHIKAWA and S. LINN
Department of Radiology, Faculty of Medicine, University of Tokyo, Tokyo
T. MIYAMAE and H. YASUKOCHI
Department of Radiology, Branchihospital, University of Tokyo, Tokyo

Recently, there are several reports concerend with the tumor deposit of ^{131}I-MAA by arterial infusion. In our laboratory, 20 patients bearing with tumors of lung, liver, pancreas, and G.I. Tracts were examined about this ^{131}I-MAA infusion. In our cases, 150-400 μCi of the ^{131}I-MAA were injected into the alimentary canals of the tumors and followed successively by the use of scanner with 2 inch. NaI crystal honey cone and or

cylindrical cone to get their scintigrams. In the cases of tumors of pancreas and G.I. Tracts, ^{131}I-MAA was given intra coeliac artery and their poor scanning results in the region of two indicated that the large amount of the injected ^{131}I-MAA may definitely be deposited into the spleen. On the other hand, when ^{131}I-MAA injected into the alimentary canals of the lung, liver, and spleen directly, their scintigrams showed good results. In the case of lung tumor, ^{131}I-MAA deposited into two parts, tumor and normal lung tissue, however, there was no significant difference in term of activity decay between the both parts. In the case of liver tumors, deposition of given ^{131}I-MAA were seen both the liver and the spleen at the same time because ^{131}I-MAA was injected into the coeliac artery. All of our ^{131}I-MAA liver scintigrams showed good deposition in their tumors inspite of the ^{198}Au examination showed the "defect" in the tumor area. The liver scintigrams which were taken immediately after the injection of ^{131}I-MAA showed difference in nature with the tumor vascularities. The scintigrams of the spleen were good in nature because of their large blood supplies. In general, when ^{131}I-MAA was given into a coeliac artery, good deposition was always seen in the vascular abundant organ. Now we have a conclusion that the degree of deposition of the given ^{131}I-MAA may largely be depended on the tumor vascularity. All our cases showed no deposition 4 days after injection of ^{131}I-MAA whose reasons may depends mainly on activity decay. It was difficult to find the decay difference between tumors and surrounding tissue. We will continue these examinations till some definite conclusion of these deposit decay are analysed.

Studies on the Radiosensitivity of the Cancer of the Uterine Cervix

S. Iwai, K. Shiozawa, N. Kamijo, K. Sakurai, T. Matsukawa and H. Hokura
Department of Obstetrics and Gynecology, Faculty of Medicine, Shinshu University

The examinations to find out the radiosensitivity of the cervical cancer of the uterus were undertaken about ^{32}P-uptake, O^2 tension, DNA content and histological examination.

According to the macrospectic and histological changes of the primary lesion of the uterine cervix after test irradiation, the patients were classified good-, mediate- and poor responded group.

The relationship between the radiosensitivity and the results of each examination was as follows:

1. ^{32}P-uptake; In good responded group, the ratio of T/C (CPM of the tumor/CPM of the vaginal wall) decreased markedly after the test irradiation, while in the poor responded group, the degree of the despression of the T/C ratio was considerably lower than that of the former group.

2. Content of DNA; The modal DNA values before the test irradiation varied between hyperdiploed and hypertetraproid range. After the irradiation, the modal DNA values of all cases were depressed in various degree, and the range of scatter was narrowed than that of before the test irradiation. But no significant correlationship could be noticed between the radiosensitivity and the content of DNA.

3. pO_2; Quantitative measurements of oxygen tension in the tumors and in the control normal portio was made.

The tissue oxygen tension of cancer was 21.2 mmHg, which was markedly lower than that of the normal portio (50.4).

Before irradiation, the good responded group averaged 21.4, while the meditate and poor responded group marked 21.3 and 17.0.

In most of the cases oxygen tension raised