570

FUNDAMENTAL STUDIES OF RADIOIMMUNOIMAGING WITH Ga-LABELED ANTI-TUMOR MONOCLONAL ANTIBODIES.

M.Kunimatsu,M.Koizumi,K.Endo,H.Sakahara, T.Nakashima,H.Ohta,T.Furukawa,Y.Ohmomo, A.Yokoyama and K.Torizuka. Kyoto University Hospital, Kyoto.

This study was undertaken to develop the labeling method of Ga-67 and Ga-68 to ani-tumor monoclonal antibodies (Ab). Monoclonal Ab against subunit of human chorionic gonadotropin (hCG) was conjugated with Deferoxamine (DFO) by using glutaraldehyde as a coupling reagent.

Using this method, we obtained Ga-labeled monoclonal Ab with ease and almost full retention of immunoreactivity. The biodistribution of radiolabel was attempted in nude mice transplanted with hCG-producing human teratocarcinoma, and showed good accumulation to tumor. However in this mehod, nonspecitic uptake in the liver was also high. The high liver uptake seems to be due to the inter- or intra-molecular cross linkage by glutaraldehyde. Therefore, we tried to use the heterocoupling reagent, SPDP or EMCS, instead of glutaraldehyde. We could decreased the inter- molecular cross linkage and the nonspecitic uptake in the liver also became low. These result indicated that coupling reagents could affect the tissue distribution of radiolabeled Ab and the use of SPDP or EMCS would be suitable for radioimmunoimaging than glutaraldehyde.

571

CLINICAL TRIAL OF MELANOMA IMAGING WITH In-111 LABELLED ANTI-MELANOMA MONOCLONAL ANTIBODY (96.5).

H. Oyamada, S. Terui, H. Fukukita, T. Nobata, K. Ishihara (Natl. Cancer Ctr.), Y. Tateno (Natl. Inst. Rad. Sc.).

Five cases with Stage IV melanoma and one case with basal cell carcinoma were subjected to radioimmunodetection with In-111 labelled antibody (96.5).

As for melanoma cases, of 14 palpable nodules which were more than 2.5 cm in size, 12 were depicted on the scan. Of 4 lung metastases, however, only one was depicted, which was thum-tip size. One lung metastasis of similar size was missed, which was located just above the right diaphragm. The remaining two were small finger tip size. In the cases with gregorious or multiple small nodules, results were considered on the basis of "area". In such cases, all 5 areas were depcited. Among 5 cases summarized here, two sites of false positive were noted; one was the site of repeated injections and the other was the area of lymph stasis. Ga-67-citrate scan was performed in two cases, and the lung metastasis missed with the antibody (thum-tip size) was clearly depicted with Ga-67. Three nodules were equally depicted and one missed by both. In one case, an area of high Ga-67 uptake did not show any uptake of the antibody, probably due to inflammation.

In one case of basal cell carcinoma, the tumor was found capable of concentrating the antibody to some extent.

At present, we think that further clinical evaluation is necessary.

572

TUMOR IMAGING USING TC(V)-99M DIMERCAPTO-SUCCINIC ACID.

H.Ohta,K.Endo,T.Fujita,H.Sakahara, T.Nakashima,M.Koizumi,K.Torizuka, I.Yomoda,K.Horiuchi and A.Yokoyama. Kobe Tamatsu Hospital,Kobe, Kyoto University,Kyoto.

Being aware of the ideal nuclear properties of Tc-99m, we have developed a new tumor seeking agent Tc-99m(V) dimercapto-succinic acid (Tc(V)-DMS). In order to evaluate the clinical usefulness of Tc(V)-DMS, 400 untreated patients with histologically proven diagnoses were studied with Tc(V)-DMS, and in some cases, these results were compared with those of Ga-67 citrate.

There was a high degree of usefulness of Tc(V)-DMS scintigraphy in patients with head and neck tumors, medullary thyroid carcinomas, soft tissue and bone tumors. But in patients with lung tumors, liver tumors, malignant melanoma or malignant lymphomas, Tc(V)-DMS scintigraphy was of no or little use, and these results suggested the different uptake mechanism from Ga-67 citrate.

573

THE STUDY FOR TUMOR UPTAKE MECHANISM OF TUMOR-SEEKING RADIOISOTOPE, Tc-99m-DMSA (DMS)—COMPARISON OF DMS DYNAMIC STUDY WITH ANGIOGRAPHY IN RELATION TO TUMOR VASCULARITY.

T.Odori,T.Matsushita,H.Maeda,K.Hayakawa, T.Shibata,K.Yamashita,S.Nakatsugawa, N.Asada,D.Hamanaka and Y.Ishii.Fukui Medical School, Fukui.

The factors for DMS uptake by the tumor are thought to be a convolution of variors elements, such as tumor vasularity, extra-vasular space size, membrane permeability and the seguestrated tracer metabolism. To elucidate the mechanisms of tumor uptake, these factors are to be seguentially deconvoluted.

In this study, twenty seven patients with bone and soft tissue tumor (benign and malignant; 10 and 17 cases, respectively) underwent DMS dynamic study and the results were comparad with those of angiography, dynamic CT (D-CT) and Tc-99m-albumin dynamic study (D-Alb).

Eleven patients (benign, 4; malignant, 7) with hypervascular tumor shown on angiography all showed positive uptake of delayed DMS image with different D-DMS pattern from one of D-Alb. On D-DMS study tumors showed gradual and consistent uptake irrespective of tumor malignancy or brnignity, in contrast to early plateau phase reaching on D-Alb study of the same patients.