

542

QUANTITATIVE ANALYSIS OF PHYSIOLOGICAL Ga-67 HILAR ACCUMULATION, ESPECIALLY ITS RELATIONSHIP TO SMOKING.

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By studying Ga-67 scintigram and chest roentgenogram of 103 cases with none of known chest disease or malignant lymphoma, the authors quantitatively analyzed the physiological Ga-67 hilar accumulation and relationship between hilar accumulation and smoking.

After the count of thigh was managed as BKG, Hilar Liver Ratio (HLR), the Hilar BKG Ratio (HBR) and Bilateral Hilar Ratio were calculated.

The results follows.

1. The HLR in and HBR were significantly higher in smoker than non smokers (p 0.05).
2. Physiologically, mild hilar accumulations were seen more frequently than strong accumulations (13/19=68%) and latter were seen in smokers exclusively (6/6=100%).

543

CLINICAL ASSESSMENT OF Tc-99m DMSA ABNORMAL UPTAKE BY MALIGNANT TUMORS. S.Kosuda, Y. Hirono, K.Tamura, A.Kubo, S.Hashimoto. Okura National Hospital and Keio University, Tokyo.

Besides localization of Tc-99m DMSA within the normal renal cortex, we recently experienced a case of metastatic bone tumor which demonstrated intense uptake of Tc-99m DMSA. In our concern for further diagnostic study of malignant tumors by Tc-99m DMSA, we performed scintigraphic studies in patients with various malignant tumors using Tc-99m DMSA, in view of detecting malignant tumor.

Tc-99m DMSA uptake by various malignant tumors was examined in 39 patients (50 lesions). The positive rate of Tc-99m DMSA was 58% (29/50) lower than that of Ga-67 citrate, 84% (28/33). 2 cases also showed the abnormal Tc-99m DTPA uptake in the metastatic lesions.

In conclusion, our findings suggest that Tc-99m DMSA possibly has affinity for malignant tumor cells. The details of tumor affinity mechanism of Tc-99m DMSA, including other renal scanning agents, still must be studied.

544

RADIOIODINATED-IMP AS A NEW TUMOR AFFINITY AGENT FOR MALIGNANT TUMOR. N.Watanabe, K.Yokoyama, S.Kawabata, H.Shyuke, K.Mukai, H.Sumiya, H.Seki, H.Matsuda, H.Ishida, T.Aburano, N.Tonami and K.Hisada. Kanazawa University. School of Medicine, Kanazawa.

Radioiodinated N-isopropyl-p-iodoamphetamine (IMP) is an attractive choice for cerebral perfusion imaging. Besides its use for cerebral perfusion imaging, its uptake in melanoma cells in vitro and in vivo imaging of human melanoma have been reported recently. So we examined the specific tumor uptake of IMP in the animal models of tumor and inflammation.

We used B-16 melanoma, Lewis lung cancer, Hepatoma AH109A, Ehrlich ascites tumor and Yoshida sarcoma for tumor model and drug-induced abscess for benign inflammation. Radionuclide images were taken using a gammacamera 6, 12 and 24 hours after IV injection of IMP in each mouse. For organ distribution analysis, mice were sacrificed and the tumor and the other organs were assayed for radioactivity. As a result, high uptake of IMP was noted in B-16 melanoma and Lewis lung cancer with the mean tumor to blood ratio of 9.8, 13.3 respectively at 12 hours after IV injection. Turpentine oil-induced abscess also showed good accumulation of IMP. In conclusion, the utility of IMP for the tumor imaging was suggested.

545

COMPARATIVE STUDY BETWEEN UPTAKE OF Tc-99m-PMT BY HEPATOMA AND HISTOLOGIC FINDINGS OF THE TUMORS.

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Results of imagings with Tc-99m-PMT and Ga-67 were analyzed in their relation with cytological findings of the tumors in 32 patients with hepatocellular carcinoma. Delayed Tc-99m-PMT imaging showed focally increased uptake of radioactivity by the tumor in 14 patients (44 %) and equilibrated uptake in six (19 %). Meanwhile, increased uptake of Ga-67 by the tumor was seen in 15 patients (47 %). In accordance with the cytological characteristic determined by both nuclear size and degree of nuclear hyperchromatism, one of Broder's criteria, degree of differentiation of hepatoma cells was designated as highly, intermediately and mildly differentiated carcinoma cells. The incidence of the hepatic tumors taking up intense radioactivity of Tc-99m-PMT was higher in patients with highly differentiated hepatomas than in those with intermediately differentiated ones; 75 % (6/8) versus 32 % (6/19). In contrast, uptake of Ga-67 by the tumor showed the opposite tendency; 25 % (2/8) versus 58 % (11/19). It is indicated that degree of differentiation of hepatoma cells might be reflected in the difference between uptake of Tc-99m-PMT and Ga-67 by the tumors. No clear correlation between uptake of Tc-99m-PMT by the tumors and Edmondson's grade of the tumors, however, was found in our series.