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SCINTIGRAPHIC EVALUATION OF SOFT TISSUE TUMORS WITH Tc(V)-99m DIMERCAPTOSUCCINIC ACID, A NEW TUMOR SEEKING AGENT. K. Endo, H. Ohta, H. Sakahara, T. Nakashima, R. Morita, K. Torizuka, H. Masuda, A. Yokoyama, Y. Kotoura Kyoto University. Kyoto. K. Ikekubo, Kobe Municipal Central Hospital. Kobe.

Tumor scintigraphy, using Tc(V)-99m Dimercaptosuccinic acid (Tc(V)-DMS) was performed in 54 patients with soft tissue tumors, and the result was compared with that of Ga-67 citrate. Tc(V)-DMS was found to have superior sensitivity of 86% for malignant tumors to that with Ga-67 citrate of 73%, but inferior specificity of 71% to that with Ga-67 citrate of 83%. And the accuracy of the scan in soft tissue tumors with Tc(V)-DMS and Ga-67 citrate was 76% and 80%, respectively. Especially, in 5 patients with pathologically confirmed extraabdominal desmoid tumor, there was a significant uptake of the tracer in all 5 cases, but Ga-67 citrate scan was positive only in 1 case. Although the accumulation of Tc(V)-DMS has been detected in some benign soft tissue tumors, the less accumulation to the inflammatory lesions than that of Ga-67 citrate was observed. These results visualized a different uptake mechanism for this agent and Tc(V)-DMS could be of good use in the detection of extension or location of malignant soft tissue tumors.

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LABELING OF POLYCLONAL AND MONOCLONAL ANTIBODIES WITH Ga-67: EFFECT ON THE ANTIBODY ACTIVITIES. Y. Ohmomo, T. Furukawa, A. Yokoyama, H. Sakahara, T. Nakajima, H. Ohta, K. Endo and K. Torizuka. Dept of Pharmaceutical Sciences and Medicine, Kyoto University. Kyoto.

Antibodies (Ab) against cancer associated antigens were labeled with Ga-67 by using Deferoxamine (DF) as a bifunctional chelating agent. Polyclonal Ab to  $\alpha$ -fetoprotein and monoclonal Ab to thyroglobulin were coupled to DF using glutaraldehyde and Ab activities were examined by RIA and tanned sheep red blood cell hemagglutination technique (Thyroid test), respectively. Ab activities were almost completely destroyed when DF/IgG molar ratio was over 6.7, whereas both Ab activities were preserved if DF/IgG molar ratio was less than 2.1. These DF-IgG couplings were easily and completely labeled with Ga-67 chloride by mixing together within 30 min and purification step was not necessary. Ga-67 labeled Ab by using DF as a bifunctional chelating agent were stable in vitro and in vivo and free Ga-67 was not detectable in mouse serum at 4 days after the injection. This method could also apply to In-111 and Ga-68 labeling of polyclonal and monoclonal Ab and would be useful for the radioimmuno-detection of cancers.

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TUMOR IMAGING USING I-131 LABELED ANTIBODIES TO HUMAN  $\alpha$ -FETOPROTEIN: COMPARISON BETWEEN POLYCLONAL ANTIBODIES AND MONOCLONAL ANTIBODIES. H. Sakahara, K. Endo, T. Nakashima, H. Ohta, K. Torizuka, K. Okada, and O. Yoshida. Department of Nuclear Medicine and Urology, School of Medicine. T. Furukawa, Y. Ohmomo, and A. Yokoyama. Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto. S. Nishi and H. Hirai. Hokkaido University, Hokkaido.

Using polyclonal and monoclonal antibodies (Ab) to human  $\alpha$ -fetoprotein (AFP), tumor accumulation of I-131 labeled Ab in nude mice bearing tumor were examined.

Polyclonal Ab obtained from horse antiserum were purified by affinity chromatography. Affinity constant ( $K_a$ ) and binding capacity were  $1.62 \times 10^7 M^{-1}$  and  $105 \mu gAFP/mgIgG$ , respectively. Monoclonal Ab were prepared by mouse hybridoma technique.  $K_a$  and capacity of monoclonal Ab were  $1.10 \times 10^7 M^{-1}$  and  $735 \mu gAFP/mgIgG$ , respectively. Nude mice transplanted with AFP producing human testicular tumor were administered with I-131 labeled Ab. Scintigraphy was taken serially and at day 7, tissue distribution of radioactive IgG was studied. Tumor images were clearer and tumor/blood ratio were higher with monoclonal Ab than with polyclonal Ab ( $2.30 \pm 0.45$  vs  $0.82 \pm 0.14$ ,  $p < 0.001$ ).

In conclusion, monoclonal Ab to AFP would be more suitable agents for radioimmuno-detection of testicular tumor than polyclonal Ab.

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RADIOIMMUNODETECTION WITH I-125 LABELED ANTI-HUMAN AFP MONOCLONAL ANTIBODIES. M. Yanagisawa, T. Machida, M. Miki, H. Yamazaki, Y. Higashi, N. Kondo, T. Takahashi and H. Kurauchi. The Jikei University School of Medicine. Tokyo. S. Nishi. Yamanashi Medical College. Yamanashi.

Anti-human AFP monoclonal antibodies were made by the hybridoma technique. Radioimmuno-detection with radiolabeled anti-human AFP monoclonal antibodies was performed. I-125-labeled anti-human AFP monoclonal antibodies ( $5-10 \mu g, 3-5 \mu Ci$ ) were injected to AFP producing tumor line in nude mice. Whole body scanning was performed at 1, 3, 5 and 8 days after administration. The tumor bearing nude mice were sacrificed at 4 or 8 days after administration. Radioactivity of the tumor tissue and other organs were measured. Satisfying tumor positive images were obtained at 3 days after administration. But these images were not so good comparing with the images with radiolabeled polyclonal antibody. From the results of this study, the character of monoclonal antibodies were found on the tumor image and the organ distribution.