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NEWLY DEVELOPED MONOCLONAL ANTIBODIES AGAINST HUMAN THYROID CANCER FOR RADIOIMMUNODETECTION. K.Koizumi,K.Yokoyama, N.Watanabe, S.Kawabata, N.Shuke, S.Kinuya, T.Aburano, N.Tonami, K.Hisada. Kanazawa University School of Medicine, Kanazawa.

BALB/c mice were immunized by insoluble fraction of homogenized thyroid papillary adenocarcinoma cells (TPC-1) growing in vitro. Their splenocytes were fused with mouse myeloma cells. Four different types of MoAb (KTC-1 to 4) were obtained. Out of 4, one (KTC-3, IgM) was selected for this study because of its superiority. The MoAb was labeled with I-131 by Iodogen method of 20 to 1 Iodogen to MoAb molar ratio (specific activity 0.66 mCi/mg). It was also labeled with In-111 by cyclic DTPA anhydride method of 20 to 1 DTPA to MoAb molar ratio (1.6 mCi/mg). Biodistribution and scintigraphy of the labeled MoAb and those of non specific mouse IgM was evaluated in nude mice bearing thyroid anaplastic carcinoma (THC-5-JCK). The tumors were well visualized 3 and 5 days after injection of the I-131 labeled MoAb though mouse IgM did not show any affinity. Tumor uptake of the I-131 labeled MoAb on day 7 was 0.53 ± 0.13 %ID/g and tumor to blood ratio was 2.0 ± 0.8 (n=6). In-111 labeled MoAb showed a different biodistribution; tumor uptake was 0.88 ± 0.09 %ID/g and tumor to blood ratio was 5.5 ± 3.4 (n=6). In conclusion, this MoAb is promising for radioimmunodetection and applicable to radioimmunotherapy.

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TUMOR LOCALIZATION AND RADIOIMAGING WITH MONOCLONAL F(ab')2 FRAGMENT AND IgG. S.Higashi, Y.Kuniyasu, Y.Niio and H.Yasukouchi. Teikyo University Hospital, Tokyo.

We investigated tumor binding activity (in vitro) and imaging-factors (in vivo) of F(ab')2 fragment and IgG. F(ab')2 fragment and IgG of monoclonal antibody specific for uterine cervical cancer in cell cultures (Hela cell) were generated, purified and radiolabelled with I-131. Specific activities were 1-2 μCi/μg. The reactivity with Hela cell by in vitro cell binding assay was 38% in F(ab')2 fragment and 16% in IgG. Little or no binding of F(ab')2 fragment and IgG to other culture cells including Hep-2, FL, and Vero were observed. Tumor uptakes in Hela cells transplanted in nude mice were similar between the IgG and F(ab')2 fragment within 3 days after injection. Both the ratios of tumor to non-tumor site were 2-3 at 48 and 72hr after injecton. Tumor to blood ratio of F(ab')2 fragment was 2-3 times higher than that of IgG, because the F(ab')2 fragment was cleared 2 times more rapidly than IgG. In imaging study, tumor localization was clearly visualized at 24 hr after the injection of F(ab')2 fragment, and became clear by day 3 with little background. The 1-day image of F(ab')2 fragment was comparable to the 3-day image of IgG.

These results suggest that F(ab')2 fragment is superior to IgG in radioimaging.

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RADIOIMMUNOIMAGING OF HUMAN COLON AND GASTRIC CANCERS XENOGRAFTS BY MONOCLONAL ANTIBODIES, NCC-ST-439 AND NCC-ST-433. K.Nakamura,I.Nishiguchi,Y.Tsukatani,A.Kubo, S.Hashimoto,T.Ohishi,M.Watanabe,S.Kodaira, and O.Abe.Keio University, Tokyo.

The aim of this study was to evaluate monoclonal antibodies(IgM), NCC-ST-439 and NCC-ST-433, raised against a gastric cancer (ST-4), xenografts, in the radioimmunoimaging for human colon and gastric carcinoma xenografts in nude mice. Labelimaging and localization experiments were performed by IV injecting approximately 40 uCi of I-125 labelled antibodies into nude mice bearing CO-4(colon carcinoma), and H-111 (gastric carcinoma). There was uptake of NCC-ST-439(polymer) into the CO-4 at day 8, with tumor to blood ratio (T/B) 3.0, but tumors were not clearly visualized until 4 days post injection. By injecting NCC-ST-439(monomer), tumors were better seen at day 3 (T/B=1.7), while average accumulation into the tumors equaled to 0.33% of the total injection dose (ID). Uptake into liver was 0.74% of the ID, probably due to the immunocomplex with the antigen in the blood. On the other hand, NCC-ST-433 was selectively accumulated into the H-111 with T/B as high as 7.8 at day 7, with no significant uptake into liver, spleen and kidney as well as stomach itself. Excellent images were obtained 3 days after the injection. The efficacy of IgM antibodies for in vivo diagnosis and therapy has been questioned. NCC-ST-433 holds promise for the radioimmunoimaging of gastric cancer.

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ANALYSIS OF ANTIGEN DETECTED BY MONOCLONAL ANTIBODY 130-22. Y.Matsuoka,T.Nakajima, H.Sakahara,M.Koizumi,T.Yoshida,T.Nakagawa, N.Yamaguchi,K.Endo,and K.Torizuka.Mie Univ. Sch.Med.,Kyoto Univ.Sch.Med.,and Fukui Med. Sch.

Hybridomas were prepared from the spleen cells of BALB/c mice which have been immunized with PC-9 human lung adenocarcinoma cells, and we obtained a hybridoma clone which produced monoclonal IgG_1 antibody,termed 130-22 that showed specificity to PC-9 cells. Immunoperoxidase staining of cultured cells revealed that 130-22 was reactive with PC-9 cells but not with other ten tumor cell lines nor peripheral blood lymphocytes. By immunohistochemical analysis, 130-22 bound not only to lung adenocarcinomas but also to ovarian carcinomas.By contrast,130-22 had no reactivity with other carcinomas nor normal tissues tested except weak reactivity with bronchial epithelium.In the present study,we have investigated that 130-22 bound to ovarian carcinoma associated antigen, CA125. It suggests that this antibody detects the antigen common to these two different carcinoma categories. Moleculer weight of the antigen was in excess of 10^6, since antigenic activity for CA125 measured with OC125 or 130-22 was eluted with the void volume on Sephacryl S-300 chromatography.