In theory, for many clinicians to manage malignancy, it is desired to detect a small primary lesion or micro-metastases of malignancy in early stage. In this study, radioiodinated MoAb could be one of the ideal signals. However, clinical use of radioiodinated MoAb for human tumors has not been established.

In attempting to radioimmunodetection for human malignancy, we established the experimental animal model as a lymphoma. The nude mice bearing human mammary carcinoma were examined. The MoAb J8100 against human mammary carcinoma which has been established its specific reactivity by using of ELISA assay and tissue staining, was radioiodinated with 111I by iodogen method and used to image in vivo. After the intraperitoneal injection of radioiodinated MoAb (24-120h), the mouse was imaged by γ-camera with pinholecollimator. As a result, progressive accumulation of radioiodinated antibody was observed in mammary carcinoma during 96h after injection. As a result, injection of radioiodinated MoAb was also performed as above discribed their tissues were removed and counts/weight were measured to calculate the ratios. As a result of injection 96h, the highest accumulation was noted in mammary carcinoma whereas no accumulation in the control gastric carcinoma. This study demonstrated that this 1-19 labeled MoAb well preserved its binding specificity to human mammary carcinoma in vivo as well as in vitro assay.

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We have developed several monoclonal antibodies (Ab) against human osteogenic sarcoma, one of which osteosarcoma xenograft (K7005) in nude mice. To compare In-111 labeled Ab with radioiodinated Ab for radioimmunomaging, whole IgG and F(ab')2 fragment of OST7 labeled with these radionuclides were injected into nude mice bearing K7005. All radiolabels retained their antigen-binding activity and clearly visualized transplanted tumors. Net tumor concentration of In-111 labeled OST7 was 30% of injected dose per gram and higher than that of radioiodinated one (about 2% of dose per gram) but In-111 labeled Ab showed high accumulation in the liver and kidney. In radioiodinated OST7, F(ab'), fragment provided much better images than intact Ab. Using F(ab'), fragment as a carrier for In-111, little improvement of images was obtained due to high background activity in the kidney and liver.

Since localization of OST7 in K7005 is excellent, this model system gives a good basis for evaluating in vivo characteristics of radioiodinated Ab.