with tumor which was diagnosed as malignant histologically, and was compared with Yb-169 citrate injection cases. Co-57 BLM 0.2mCi was injected to 4 patients who were treated by the arterial infusion through the polyethylene tube, in which was puted A. temporalis superficialis, and 0.5mCi was administered intravenously. Within 17 to 24 hours after injection, scintiphography was taken with Scintillation camera (PHO/GAMMA HP) New Clear Cicago.

**Result:** (1) 13 cases in 16 patients were obtained as positive image scintigraphies obviously. 3 patients who found a intensive necrotic tissue and received high irradiation were not showed radioactivity.

In histological classification, positive images were 10 squamous cell carcinoma, and malignant lymphoma, lymphoepithelial carcinoma and plasma cell cytoma, each 1 cases. (2) In this agent high radioactivity was found in only tumor tissue and characteristically in soft tissue tumor as compared with Yb-169 citrate. Tumor localization by this agent identified with X-ray photo findings and surgery views after the scintigraphical examination. The form of tumor and the inner construction in detail were suggested better than Yb-169 citrate. (3) There was compared scintiphoto by intra-arterial injection method with intra-venous method, but not different between them to diagnosis.

**The Comparative Study of Radioisotopes for Tumorscan Agents**

---on $^{67}$Ga citrate, $^{169}$Yb citrate, $^{57}$Co-BLM and $^{203}$HgCl$_2$---

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We have studied to clinical evaluation of $^{67}$Ga citrate, $^{169}$Yb citrate, $^{57}$Co-Bleomycin ($^{57}$Co BLM) and $^{203}$HgCl$_2$ of which has been routinely used as tumorscan agents.

Preceding clinical evaluation of tumorscan agents, we inquired experimentally into the distribution of RI in whole body and tumor specimen.

RI-distribution and uptake over organs and tumor were investigated by means of macroradiography, microradiography and pulse high analyser, which were performed by making use of mouse bearing Ehrlich tumor.

And RI-adhesionsrate to albumin was calculated by means of adding RI to human serum albumin.

1) $^{67}$Ga citrate
The distribution to organs was more rich in liver, spleen and lung than in tumor, and the accumulation to tumor specimen was rich in cytoplasm. The uptake to tumor was 1.07%, and the adhesionsrate to human serum albumin was 35.11%.

2) $^{169}$Yb citrate
The distribution to organs was more rich in bone than in tumor, and the accumulation to tumor specimen was rich in near cell membrane.

The uptake to tumor was 2.08%, and the adhesionsrate to human serum albumin was 28.97%.
3) \(^{57}\text{Co-BLM}\)
The distribution to organs was more rich in liver than in tumor, and the accumulation to tumor specimen was rich in cytoplasm was well as in nucleus. The uptake to tumor was 0.74\%, and the adhesions rate to human serum albumin was 33.09\%.

4) \(^{203}\text{HgCl}_2\)

The distribution to organs was more rich in kidney, liver, muscle and intestine than in tumor, and the accumulation to tumor specimen was rich in cytoplasm. The uptake to tumor was 2.58\%, and the adhesions rate to human serum albumin was 99.61\%.

And we demonstrated clinical cases and the accuracy in the clinical tumorscan.

Clinical Evaluation of \(^{169}\text{Yb-citrate}\) Tumor Scintigraphy
(First Reports: A Comparative Study of \(^{67}\text{Ga-citrate}\) and \(^{57}\text{Co-bleomycin}\))

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The advantages of \(^{169}\text{Yb-citrate}\) tumor scintigraphy are as follows:

1) Since \(^{169}\text{Yb-citrate}\) has a relatively long shelf-life, \(^{169}\text{Yb}\) can be available any time tumor scintigraphy is required.

2) \(^{169}\text{Yb}\) is a reactor-produced nuclide and much cheaper than \(^{67}\text{Ga}\) or \(^{57}\text{Co}\) which is a cyclotron-produced nuclide.

3) Body background is extremely small, especially 3–5 days after injection, and tumor image is obtained very clearly.

4) Distinct visualization of the skeleton is helpful in localizing the anatomical landmark.

A hundred to 1,000 \(\mu\text{Ci}\) of \(^{169}\text{Yb-citrate}\) was administered intravenously to each volunteer patient. Scintiphotos were obtained at intervals of 1–5 days following the administration. In our 95 cases, no side effects have been observed.

In 47 of 73 cases (64.4\%), the tumors were positively delineated. False positive of \(^{169}\text{Yb-citrate}\) scintigraphy was 22.7\% (3/22). As a comparative study on \(^{67}\text{Ga-citrate}\) tumor scintiphotos of 160 cases and \(^{57}\text{Co-bleomycin}\) tumor scintiphotos of 32 cases, each true positive of the tumors were 91.1\% (112/123) and 70.8\% (17/24). Each false negative were 43.2\% (16/37) and 37.5\% (3/8).