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EXPERIMENTAL AND CLINICAL STUDIES ON A NEW BONE SCANNING AGENT (Tc-99m-DPD). N.Otsuka, A.Muranaka, K.Nagai, M.Yoneda, M.Sawai, H.Terashima, S.Yanagimoto, J.Saito and Y.Ito. Div. of Nuclear Med., Kawasaki Medical School. Kurashiki

In 1981 A.Schwarz and G.Kloss developed Tc-99m-DPD (2,3-dicarboxypropane-1,1-diphosphonic acid, DPD) and reported its excellency of accumulation in bone, compared with hitherto reported bone scanning agents. This study was carried out for comparison of the label with Tc-99m-MDP (MDP). Blood clearance of rabbits with DPD was slightly faster 2 hours after administration than with MDP. From the results obtained from scintimetry and scintigraphy of rabbits, a significant difference between MDP and DPD was not noted in the degree of deposition in bone. With regard to clinical studies, blood clearance with DPD was faster than that with MDP. However, the result was not statistically significant. When the quality of scan image between both labels was compared, pathological to normal bone ratios were nearly the same degree in 1.5 hrs and 2 hrs after administration. However, pathological to soft tissue ratios in 2 hrs were superior to those with MDP. It is concluded that DPD is slightly superior to MDP or nearly the same as MDP.

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UPTAKE AND LOCALIZATION OF Tc-99m MDP IN THE MOUSE OSTEOSARCOMA. H.Nakashima, H.Ochi, K.Hamada, H. Ikeda, M.Omura, Y.Onoyama, H.Hamada, K.Takaoka. Osaka University Medical School. Osaka City University Medical School. Osaka.

The localization of Tc-99m MDP in mouse osteosarcoma was studied using a skeletal scintigraphic method and macro- and micro-autoradiographic methods. On the skeletal scintigraph, the tumor showed a high uptake of Tc-MDP and its concentration was about twenty times as high as the value seen in the muscular tissue. The macroautoradiography showed high activity in the tumor bone region and little activity in the non-ossified region. On the microautoradiography, the activity of Tc-MDP was localized in the mineralized matrix of tumor bone and was almost nil in the non-mineralized matrix (osteoid) and the tumor cells. These findings indicate that the mineralization of the tumor bone matrix plays an important role in Tc-MDP uptake in osteosarcoma.

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CLINICAL COMPARISON OF Tc-99m DPD AND Tc-99m MDP. J.Nishikawa, T. Otake, K. Machida and M.Iio, Tokyo University Hospital. H.Murata, Tokyo Geriatric Hospital. Tokyo.

A clinical comparison of new bone seeking agent (Tc-99m DPD, 2-3-Dicarboxy propane-1, 1-diphosphonate) and Tc-99m MDP was performed in 31 patients (12 males and 19 females, 31 - 92 years of age --- mean 62 years old ). All patients were received an intravenous injection of 15 - 20 mCi of two agents in the duration of at most 1 month. Whole body and spot images were made 2 - 3 hours after injection. Whole body images were divided into three categories visually, namely Good, Fair and Poor. Numbers of each category were as follows; Good 13:12, Fair 13:11 and Poor 5:8 ( the former is DPD ). In addition to the clinical images, a single image of anterior femoral region was acquired in 128 x 128 matrix for a preset time of 180 seconds. In 22 patients the femur / soft tissue ratio were calculated for two agents. The ratio for DPD were  $3.1 \pm 1.1$  and for MDP  $2.7 \pm 1.1$  which were not statistically significant. In 4 patients venous samples for clearance study were obtained at 10, 60, 120 and 180 min. after injection, and urinary collection for 24 hours were made. Blood clearance ratios of two agents were almost the same and urinary excretion ratio were also no significant difference.

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BONE TUMORS MICROAUTORADIOGRAPHY WITH Ga-67 CITRATE. H.Ishikawa, H.Okuno, Y.Takami, K.Sou, T.Sakai, M.Matsuda, Y.Murakami, T.Hidaka, S.Matsumoto and T.Nakai. Nissei Hospital, Osaka.

Mechanism of Ga-67 citrate localization was investigated of bone and soft tissue tumors. Ga-67 citrate 2mCi was intravenously given to 13 cases of bone and soft tissue tumors preoperatively. Preoperative scintigraphy was done. Postoperatively, tissue fragments were collected from tumor, and RI measured to compare concentration rates at different parts together. Then, microautoradiography method was done for investigations of concentrations of Ga-67 citrate.