
Radionuclide angiography was performed in 26 bone tumors and the diagnostic usefulness was evaluated with respect to abnormal patterns of blood flow represented in the tumor. After the bolus administration of 10 to 20 mCi Tc-99m human serum albumin, serial images were taken with the scintillation camera, revealing the radionuclide accumulation within the lesions. The increases in radionuclide accumulation were seen within the lesion after the initial phases in all cases of malignant bone tumors and in 7 of 13 cases of benign bone tumors. In 11 cases the imaging data was stored by TOSHIBA GMS-80A data analyser. Regions of interest were selected on the tumors and neighbors and the time-activity curves were analysed in each region. In benign tumors the time-activity curves showed delayed increases of the radionuclide accumulation. In malignant tumors, however, the time activity curves were represented by exponential function with two parameters. The numerous values of two parameters obtained by osteosarcoma were different from those of metastatic cancers. These suggested that differential diagnosis of tumors is possibly attainable by using analysis of two parameters.


Bone scintigraphy has been used to detect bone lesions and to estimate the extent of lesions (though, it frequently reveals the accumulation of radiopharmaceuticals in benign bone diseases as well as in malignant). The present study was performed to investigate the diagnostic application of thallium-201 (Tl-201) scintigraphy for a variety of bone diseases. The correlation of Tl-201 scintigraphy with that of Tc-99m MDP was also examined by clinical standpoints. (Results) There were 32 patients studied with both Tc-99m MDP and Tl-201. Analysis of findings in Tl-201 scintigraphy revealed high sensitivity and high specificity. They were 85% and 79% respectively. Overall accuracy was 81%.

Summary
1. Tl-201 scintigraphy provides useful information about whether the lesion is malignant or benign.
2. When Tl-201 scintigram was positive the lesion was malignant with 73% certainty.
3. When Tl-201 scintigraphic lesions were negative the lesion was benign with 88% certainty.