

Radioisotope Scanning in Bone Tumor

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For early detection of bone tumor, it is ideal to perform positive scanning by administration of radioisotope (RI) which is specifically taken up into it as radioiodine in some cases of the metastatic thyroid cancers, but rather exceptional even in it.

^{99m}Tc or ^{131}I -MAA may be concentrated in the bone tumor because of high vascularity in the region of the tumor, but only scarce cases positive scanning by this method could reveal tumor earlier than X-ray films or arteriograms. Strontium is metabolized similarly as calcium and rapidly localizes in bone by incorporation into new bone tissue, but positive scanning by radioactive strontium is not always specific for bone tumor. To evaluate this method in early detection of bone neoplasms, the author investigated in 75 patients with malignancy.

After intravenous injection of 20 μCi of ^{85}Sr Cl_2 , profile scanning is performed. Additional administration of 100 μCi in patients with positive profile scanning is followed by area scanning. In 10 patients, scanning revealed abnormalities earlier or more extensively than those visualized by roentgeno-

graphy. In such a case, scintigraphy is valuable for planning the irradiation field. Negative scans were obtained in 5 patients with marked abnormalities of bones on roentgenograms. In a case with malignant hemoangioendothelioma of sacrum, negative scan was obtained on admission, but following radiation therapy enhanced new bone formation and positive scan according to repaired sacrum on the roentgenograms was obtained. In general, ^{85}Sr bone scanning is useful in early detection of bone tumor in the skull, vertebra and pelvis. As accumulation of strontium is not specific for the invasion of the bone tumor, positive scan may be obtained in other pathologic conditions with possibility of new bone formation. Especially in pediatric age group, because of normal high uptake epiphyseal bone formation may simulate positive scan, one should carefully evaluate scanograms of children with bone tumor. High exposure dose and lengthy of the procedure are shortages of ^{85}Sr bone scanning, but scinticamera instead of conventional moving scanner and using short lived isotope may overcome these shortages.

Scintiscanning of Bone Tumor

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Needless to say that the scanning procedure is very characteristic and helpful to make a definite diagnosis of bone tumor.

A total of 119 ^{85}Sr bone scintiscans in 110 patients of bone diseases including bone tumors was performed.

Administering dosage of ^{85}Sr was 1 $\mu\text{Ci}/\text{kg}$ body weight and the scanning was done in 24 to 48 hours after giving the dosage.

Both the profile scans and the area scans were performed in each patient and compared

the symmetrical parts of the both extremities.

1) Malignant tumor sometimes does not show any positive scintiscan, even the severe case having remarkable bone destruction, so that it would be dangerous to make a definite diagnosis by scintiscanning alone.

2) It might be impossible to make a differential diagnosis of osteoblastic bone tumor and osteomyelitis by the scintiscan, for which X-ray would be more helpful sometimes.