etc. The remaining 59 were discarded because of unsatisfactory informations. Abnormal accumulations were divided into two categories, one is “significant accumulation” and the other “equivocal”. Ninety six patients were classified into the former category. Eighty seven (90.6%) of them were proved to be true positive, and the remaining 9 (9.4%) were false positive. Twenty-three of 25 patients in the latter category (92.0%) were proved to be benign conditions of the vertebrae, and the other 2 (8.0%) were false negative. The false positive were mostly due to degenerating spondylitis or old trauma, which were also main causes of “equivocal” accumulations. On the other hand, the false negative had uneven distributions of RI uptake affected by previous irradiation on the vertebrae.

In laboratory examinations, an average value of serum alkaline phosphatase was abnormal and the highest in the true positive cases, but most of the equivocal cases and the false positive cases were within normal limits. Therefore, it can be said that high level of serum alkaline phosphatase would suggest bone metastasis in cancer patients.

Now, we take 1/1 size scintiphotographs of vertebra in all cases and noticed that the lateral projection clearly points out increased accumulations in the intervertebral spaces, which are probably due to degenerating spondylitis.

A Problem in Reading a Scintigram, A New Finding in Bone Scintigram
4 Cases of Defect Finding
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Bone scintigraphy using $^{99m}$Tc labelled phosphate compound is an inevitable method for detecting metastatic bone lesions because of its superior detecting ability. Bone scintigraphy can detect bone metastasis earlier than X-ray film. However, there are a few false negative cases, in which no abnormal finding can be obtained by bone scintigraphy, although an obvious metastatic lesion can be obtained by X-ray examination. It is considered to be due to the fact that the reactive bone proliferation has not been fully developed in the lesions. Recently, there is a new finding on bone scintigraphy which presents a problem in reading a scintigram: It is reported that on a bone scintigram, metastatic lesion show a finding of less accumulation than the normal area, or the lesions appear as a defect finding. Four cases in which accumulation in the lesion was less than that in the normal area by bone scintigraphy using $^{99m}$Tc- were reported.

Clinical Significance of Whole Body Scintigraphy with a $^{99m}$Tc-Phosphate Compound in the Orthopaedic Field
—with Special Reference to Malignant Bone Tumors—
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We performed the scintigram test with a $^{99m}$Tc-phosphate compound of 40 primary bone tumor cases and 87 metastatic bone tumor and suspected cases, 127 cases in total and compared the accumulation pictures obtained with clinical blood examination finding, X-ray findings, angiogram and pathological findings in them in order to investigate the clinical value of the test as a subsidiary diagnostic method.

Results:
1) In primary bone tumor cases, the localization of tumors, the degree of the secondary reaction of them and the presence or absence of osteogenesis could be detected on whole body scintigrams, and the test was of use in the diagnosis of multiple foci.

2) In general, it is difficult to know with RI whether a primary bone tumor is benign or malignant. We examined pathological findings obtained in the RI accumulation sites in the bone tumor cases and found that the scintigram test was positive without reference to the malignancy or benignity of tumors when there existed such conditions of secondary bone reactions with tumors as polynuclear giant cells, stromal hyperplasia, infiltration of free cells and bleeding.

3) In metastatic bone tumor cases, the rate of skeletal metastasis detected by the whole scintigram test was as high as 87%, that is, the method was very useful for detecting skeletal metastasis in the early stage.

Clinical Evaluation of Bone Scintigram in Multiple Myeloma
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The studies of bone scintigraphy were carried out in 13 patients with multiple myeloma, one patient with non-secretary myeloma and one with macroglobulinemia Waldenström.

The scintiphotographies were taken on skull, humerus, ribs, vertebra, pelvis, femur and knee joint in each patient, 3 or 4 hours after the intravenous administration of 5 to 10mCi of ⁹⁹ᵐTc-pyrophosphate. The bone scintigrams were examined with the relation of clinical data and roentgenographic skeletal survey. The characteristic findings were as follows:

1) The abnormal findings on the bone scintigram and skeletal roentgenogram were well corresponded on vertebra, humerus and femur, but the abnormal findings on the bone scintigram were more striking on ribs and knee joints.

2) Abnormal findings on bone scintigram were more clearly obtained in L-type myeloma than in K-type myeloma.

3) There were various grade of positivity in scintiphotogram on osteolytic lesions, which suggested the existence of various types of reaction of new bone formation against the plasma cell infiltration.

4) The bone scintigraphy seemed to express the changes of metabolic states of bone lesions, while the roentgenogram only revealed the static changes in them.

5) It is concluded that the bone scintigram in multiple myeloma is very useful to gain the early information about the bone changes and is too useful for the observation of clinical course.

⁹⁹ᵐTc-Diphosphonate Bone Scanning in 10 Patients with Multiple Myeloma
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⁹⁹ᵐTc-diphosphonate bone scanning was performed in 10 patients with multiple myeloma, and compared with bone roentgenograms. In all of the cases, abnormal areas of increases activity were seen on bone scans, but cold area was not seen in any cases. The abnormal areas in the bone scans were also observes as the areas of abnormal findings in the roentgenograms. On the contrary,