Follow up Study of 20 Prostate Cancers by Bone Scanning


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The detection of bone metastases in patients with prostate cancer is proven to be useful for the detection and evaluation of the therapy and prognosis of prostate cancer.

In this study, value of follow up bone scan study on prostate cancer was evaluated on 20 cases of proven prostate cancer. Ages of these cases ranged from 50 to 83 years (mean 67.8 years) and duration of follow up period is from 2 to 5 years. In all cases the diagnosis was confirmed by histological examination of tissue obtained by either transrectal biopsy or transurethral resection.

According to the clinical staging method one patient was grouped in stage I, 3 patients in stage II, 8 patients in stage III and 8 patients in stage IV.

Nineteen patients were treated by antiandrogen therapy from the time when diagnosis was established. One patient in stage I did not receive hormone therapy.

The bone Scintigram was performed 2 hours after injection of 10mCi of $^{99m}$Tc-pyrophosphate or $^{99m}$Tc-MDP using scanner gamma camera or PHO/CON.

Follow up bone scan study, skeletal X-rays and serum phosphatase (Acp and Alp) examination were performed every three months or 12 months 8 intervals.

The results were as follows:

Out of the 11 patients who had a negative scan at the initial scan, 2 became positive scan at the initial scan, only 1 became negative scan and negative X-ray, 3 cases showed improved scans and 2 showed aggravated scans.

Among these 4 patients whose scan showed progress one case is still alive and 3 had passed away during the follow up period of 5 years. The remaining 16 patients are still alive.

We believe that follow up study in patients with carcinoma of prostate should be performed bone scan every 3 months’ intervals rather than routine X-ray bone survey.

I summary, bone scan survey were found to be useful for the follow-up of the cases with prostate cancer.

Evaluation of Abnormal Accumulations in Vertebrae Found on the Whole Body Bone Scintigram in Cancer Patients

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For the past two years, from 1975 through 1976, 412 patients were studied by bone scanning with $^{99m}$Tc-phosphate compounds for searching metastatic lesions. One hundred and eighty were found to have abnormal accumulations in vertebrae. After careful survey of their clinical records, 121 were selected for this study on the basis of autopsy findings, follow-up data of X-ray studies
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 (93.6%) 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 vertebrae 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: