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DYNAMIC BONE SCINTIGRAPHY IN EVALUATING OSTEOLYTIC LESIONS.

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In 26 patients with osteolytic lesions detected through X-ray, dynamic scintigraphy with Tc-99m EHDP was performed to evaluate skeletal abnormalities, particularly in osteolytic lesions, such as Malignant giant cell tumor 4, other primary bone tumor 3, Metastatic bone tumor 13 and benign bone tumor 6 cases.

Sequential scintigraphy was carried out during the arterial, venous, capillary, early phases and static images. Local short-term accumulation of the tracer at the locations of malignant skeletal lesions was observed during arterial and venous phases (20/20cases). These findings suggest that the correlation between tracer uptake and increased metabolic activity is highly significant in tumor-involved lesions.

In contrast, local short-term deposition of the tracer in benign bone lesions was observed in the early phase (more than 10 min).

Dynamic bone scintigraphy makes it possble to differentiate between a malignant and benign bone tumor in the radiolucent bone diseases.

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PATTERNS OF LOCALIZATION OF Tc-99m DIPHOSPHONATE IN BONE TUMORS.

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In 13 cases of bone tumor the Tc-99m diphosphonate concentration of the specimens was examined. There was a high uptake of Tc-99m MDP where neoplastic bone formation, calcification or ossification in cartilage and reactive new bone formation in tumor invasion were seen. Localization of Tc-99m MDP uptake was closely correlated with that of tetracycline.

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RETROSPECTIVE ANALYSIS OF BONE SCANS PREVIOUSLY OBTAINED IN THE PATIENTS WITH BONE METASTASIS.

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From 1976 to1978, 1250 bone scans were obtained in 822 patients with malignant neoplasms. One hundred sixty-one scans of 55 cases with a clinical diagnosis of skeletal metastasis were reviewed retrospectively to find initial findings on bone scintigram. The interval between scans averaged 7.4month. The following eight regions were studied retrospectively,and the scintigraphic findings were classified as negative, equivocal and positive. 1.skull and facial bones, 2. cervical spine, 3.shoulder and clavicles,4. ribs,5.thoracic spine,6.lumbar spine,7.pelvis and 8.extremities.

Sixty-three percent of cases with skeletal metastasis had negative findings on the previous scintigrams, whereas only 9.9% showed equivocal hot spot previously. The equivocal findings were mostly obtained in lumbar spine and pelvis. On the other hand no equivocal lesion was observed in the skull, shoulder and clavicles,cervical spine and extremities. Moreover,no specific findings on the bone scans were recognized as the initial osseous metastatic changes. However we believe that the cases with equivocal findings in lumbar and pelvic regions must be followed carefully.

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BONE SCINTIGRAPHY OF METASTATIC BONE TUMORS WITH SPECIAL REFERENCE TO OSTEOPLASTIC OR OSTEOLYTIC BONE TUMORS.

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In 155 verified cases of multiple bone metastasis, X-ray findings was reexamined retrospectively and classified into five stages according to the grade of the sclerosis or lysis in the bone lesions. The grade of abnormal uptake on the bone scintigram was compared to the X-ray findings. Abnormal radioisotopic (RI) uptake in the sclerotic bone lesions was higher than that of the lytic bone lesions. Moreover, there was a tendency that sex hormone therapy was very effective with patients who had sclerotic bone lesions. As soon as clinical symptoms disappeared with hormone therapy, RI findings on bone lesion were improved, while X-ray findings were not improved. Conversely, lylic bone lesions which had low RI uptake on bone lesions showed resistance to hormone therapy. Bone scintigraphy revealed no abnormal uptake or only slightly increased RI uptake on the bone lesions in 15 hypercalcemic patients, while X-ray findings clearly demonstrated multiple metastatic bone lesions. In conclusion, bone scintigraphy was useful to estimate the effectiveness of hormone therapy. The combined observations of X-ray and RI findings may be useful in order to choose a therapy from various kinds of therapies as well as to estimate the prognosis of each patient.