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A STUDY OF ABNORMAL RADIONUCLIDE UPTAKE TO THE BONES OF THE LOWER EXTREMITIES IN CANCER PATIENTS.

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In cancer patients, it is not uncommon to find abnormal bone uptake on the lower extremities in bone survey. This finding was thought to be caused not only by metastasis but also by benign orthopedic disorders. The purpose of this paper is to study frequency of malignancy and benign causes, and to search specific findings of benign disorders. From 1976 to 1978, 1250 bone scans were taken in 822 patients with malignant neoplasms. In 68 cases, abnormal bone uptake was found. Among them metastasis were detected in 29cases and benign in 39 cases. Metastatic lesions were located mainly in femoral head and shaft. Contrarily, benign lesions were found near the joints. In the hip, three cases of osteonecrosis(ON) and osteoarthrosis(OA) were noted. In the Knee, 10 cases of rheumatoid arthritis(RA), 12cases of OA, 3cases of articular fracture(Fx) and 2 cases of ON were noted. In the foot, 13 cases of RA, OA and Fx were noted. Each of these benign diseases has a specific uptake patterns on the scintigram. Our results showed that this findings was less frequent both two categories in malignancy(3.5%)and benign diseases(4.8%), and that common sites of the lesions have different distribution from each other.

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OBSERVATIONS ON RADIONUCLIDE BONE IMAGING IN VIBRATION DISEASE.

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Bone imaging with Tc-99m-MDP was carried out in 17 patients with vibration disease. A comparison was made between bone scintigraphy and radiography in the most frequently involved regions: cervical spine, elbow joint, wrist joint and bone of the hand.

The results are as follows:

Cervical spine: 15 of 17 patients (88%) had abnormality on radiography, while abnormal accumulation on scintigraphy was present in only 4 patients (24%).

Elbow joint: 9 patients (53%) had abnormality on roentgenography, while 12 patients (71%) on scintigraphy.

Wrist joint: 13 patients (76%) had abnormal accumulation on the scintigrams. In Contrast roentgenographic abnormality was present in only 3 patients (17%).

Bone of the hand: 6 patients (35%) showed abnormality on roentgenograms, 9 patients (53%) on scintigrams. The number of abnormal places found on roentgenograms was 31, while the number on scintigrams, 120.

Therefore, these results suggest that roentgenography is superior to scintigraphy in the detection of osseous changes of cervical spine, while scintigraphy is superior to roentgenography in the case of wrist joint and bone of the hand.

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BONE SCAN IN HYPERTROPHIC PULMONAY OSTEOARTHROPATHY (HPO).
(study in 141 proven cases of lung cancer)

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About 80% of lung diseases associated with HPO is bronchogenic carcinoma. The incidence of HPO secondary to bronchogenic carcinoma is approximately 5 to 10%. As the presenting symptoms of HPO may be painful swelling around the knees, ankles and/or wrists, it mimicks rheumatoid arthritis clinically. The retrospective review of Tc-99m-MDP using bone scans was done in 141 patients of bronchogenic carcinoma. Then we obtained 6 patients in whom diagnosis of HPO had been made clinically and radiographically.

Results

1. 4 of 6 cases had clinical symptoms of HPO. 2 of them had been treated as rheumatoid arthritis.
2. The bone scan showed the characteristic linear pericortical hyperconcentration of Tc-99m-MDP. It was able to be differentiated easily from bone metastasis.
3. Only one of 6 cases showed slight improvement of the pericortical hyperconcentration on bone scan after therapy.
4. The patient with HPO should be studied with bone scan before and after treatment.

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STUDY ON REMODELLING OF BONE GRAFTS: AN APPLICATION OF NUCLEAR MEDICINE.

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The remodelling of bone grafts depends to a large extent on type of bone graft and graft bed condition. We applied Tc-99m phosphate scintigraphy in a follow-up study on cases treated by bone graftings and quantitative analysis of the scintigram with computer to make clear the differences of remodelling time and the process of acceptance in various conditions. The result revealed that, in a case of success, accumulation ratio which stayed in high a few months after operation decreased in 12 months and reached to the normal value by 36 months after grafting. Those that showed high accumulation ratio even 12 months after operation were such cases that pseudoarthrosis, osteomyelitis or recurrence of tumor. In cases of the cancellous bone graft, accumulation ratio was restored to the normal value by 6 or 12 months sooner than cortical bone graft. According to the age of patient, in children under 10 years old, accumulation ratio attained the sooner recovery than others.