stration however the excretion of Pyrop was seemed to be relatively rapid rather than that of Polyp.

The accumlation rates of these agents in processor time invarious normal portions of the skeleton, measured externally by means of the AOI of VTR, were highest on 3–4 hours for Pyrop and on 4–5 hours for Polyp. And, the accumulation rates in the various lesions were highest on approximately 4 hours for either agent, and on 24 hours still higher than in normal portions. Consequently, lesion/normal accumulation ratios were gradually increased at least till 24 hours, and showed no tendency between benign and malignant lesions.

On the other hand, bone images on scintigram for either agent were clearly observed as early as one hour after the administration, and were most clear on about 4 hours.

Metastatic lesions were occasionally detectable by scintigram before the roentgenologic abnormality could be found. But, diffuse and systemic lesions as multiple myeloma were frequently misread to be less than actual number of lesions detectable on X-ray photogram, and osteolytic bone lesions were liable to err to be detected unlike osteoblastic lesions for either agents.

Bone Imaging and Tumor Imaging in Neoplastic Bone Disease

S. Okuyama, Y. Ito, T. Sato, T. Awano and K. Takahashi
Department of Radiology and Nuclear Medicine, The Research Institute for Tuberculosis, Leprosy and Cancer, Tohoku University, Sendai

Clinical experience with ^{67}Ga scanning in osteogenic sarcoma, bone metastasis of breast cancer, giant-cell tumor, histiocytosis X, multiple enchondromatosis, and bone cyst, led us to recognition of tumor imaging against skeletal imaging in bone neoplasms (Radiology 107: 123, 1973). Binuclidal studies on experimental VX-2 bone tumor were undertaken in the rabbit in order to demonstrate (1) bone imaging was ^{85}Sr, ^{87m}Sr, ^{99m}Tc pyrophosphate, ^{67}Ga and ^{99m}Tc bleomycin; (2) tumor imaging with ^{67}Ga and ^{99m}Tc bleomycin; and (3) absence of tumor imaging of ^{85}Sr, ^{87m}Sr, and ^{99m}Tc pyrophosphate.

Apparently, scanning of bone neoplasms with ^{67}Ga, and ^{99m}Tc bleomycin, both tumor scanning agents, would be of great help in delimiting fields of surgery and teletherapy.

Radiation Damage of Rabbit Bone Following Partial Irradiation

S. Furukawa, H. Tsunemoto and N. Fukuda
National Institute of Radiological Sciences, Chiba

If a bone was included in a irradiation field and the dose received was over the tolerable limit of the tissue, the late bone damage would become manifest in several months or years after irradiation with a spesfic features or the damage, which charactarized by a pathological fracture of a bone necrosis.

This experiment was carried out to detect the damage, which was still in the latent period. Rabbits, aged about 3 months, were used. Up-take ratio in the knee joint was higher than middle of the thigh, because of higher metabolic activity of the epiphyse. To investigate the radiation bone damage, 3000 rads of X-rays were irradiated on the left knee joint in a single dose.

A 40 μCi of ^{85}Sr was injected intravenously at 2 days after irradiation and the decay curves for ^{85}Sr incorporated in both side of the knee joints were made by simultaneous counting, applying a scintillation counter. A X-ray machine was operated at 200 KV and 20 mA with a 0.3 mmCu +0.5 mm Al filter. X-ray examination and ^{47}Ca up-take test were carried out at 1, 3, 6 and 9 months after irradiation. The fine structual change of irradiated bone were investigated using a macro-autoradiographic technique.

The count rates for irradiated or unirradiated bones decreased rapidely in several days after irradiation and, thereafter, the slope of decay curve for irradiated bone became less steep than that of unirradiated bone. The discrepancy of the two curves became more significant, if the days between the iradiation and the measurement were prolonged.

Up-take of ^{47}Ca for the irradiated bones were higher than the unirradiated bone and the abnormal deposits of radioactivities were seen within the irradiated zones.

It was suggested the late bone damage following irradiation might be characterized by the increase of bone matrix and the disturbance of the exchangable pool, because of radiation fibrosis and vascular damege.

O. Bone and Joints

Selection of Nuclide and Procedure in Scintiscanning for Tumors of the Bone and Its Soft Part

With Emphasis on Comparison among ^{99m}Tc polyphosphate, ^{85}Sr and ^{87m}Sr

M. SOHARA and N. TAKADA
Orthopedics Department
N. YUI and F. KINOSHITA
Nuclear Medicine Department,
Chiba Prefecture Cancer Center
S. INOUYE
Orthopedics Department, Chiba University, Medical School, Chiba

Scintigram is often very useful in orthopedic field, particularly in diagnosis of bone tumors. It is a well-known fact that ^{85}Sr, ^{87m}Sr or ^{18}F produces the positive pictures of malignant bone tumors.

Among various techniques using radioisotopes for diagnosis of malignant tumors so far reported, scintiscanning using ^{99m}Tc-labeled compound has