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CORRELATIVE STUDIES ON PROSTAGLANDIN, BONE MARROW AND BONE SCINTIGRAPHIES IN EXPERIMENTAL BONE TUMORS. N. Otsuka, Y. Ito, K. Nagai, H. Terashima, S. Yanagimoto and I. Nakano. Div. of Nuclear Medicine, Kawasaki Medical School. Kurashiki.

It is a crucial problem to analyze the mechanism of development of bone metastasis in malignant neoplasm, since the analysis is indispensable to catch up with treatments and prevent bone metastasis. From these points of views, we investigated the role of Prostaglandin E (PGE) and its correlation between bone and bone marrow scintigraphy in normal and VX-2-bearing rabbits. PGE in plasma of normal rabbits was 486.2 ± 185.7 pg/ml (n=86) and maximum to minimum ratio(Max/Min) was 1.85 ± 0.26 within four weeks' observations. In VX-2 rabbits, transplanted in femoral muscles, PGE was within normal range unless tumor invaded bone. PGE did not increase significantly in rabbits transplanted in pelvis when tumor was located inside the marrow cavity. However, when tumor invaded bone, PGE increased to 1335 ± 584 pg/ml. Elevation of PGE did not necessary coincide with appearance-time of bone scan. PGE treated by Indomethacine was not higher than that untreated group. Appearance-time of positivity of bone scans did not reveal any significant difference between the two groups.

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PATTERNS OF LOCALIZATION OF TC-99m DIPHOSPHONATE IN EXPERIMENTAL BONE TUMORS.

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VX₂ carcinoma (14×10^5 cells) was injected into the tibia of rabbits, ca. 3kg, through the knee joint, and RI scanning were performed when simple X-ray revealed bone destruction. Ca. 3 hours after i.v. injection of Tc-99m-MDP ImCi, bone scintigraph was taken. Further only the leg bone was excised, scanned, and then ca. 5mm thick cut specimens were prepared to compared each scintigram. Next ca. 5mm cubic tissue was taken from each site in the center and periphery of tumor of the cut specimen, and, after measuring the weight, it was subjected to measurement with well-type scintillation counter as well as histological examination. In the center of tumor, tumor cells and necroses were seen with little accumulation of Tc-99m while in the periphery of tumor reactive bone formation was seen abundantly with much accumulation of Tc-99m-MDP. Studying the accumulation of Tc-99m-MDP with microautoradiography, it has been found not to accumulate at all in the part of tumor growth, but to accumulate only in the part of reactive bone formation.

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DIFFERENTIAL DIAGNOSTIC POSSIBILITY OF VARIOUS BONE DISEASES BY USING TOGETHER BONE AND TUMOR SCANNING. Y. Kawada, Y. Kuniyasu, H. Kakehi, K. Koyama, S. Mimoto and M. Yasuda. Teikyo University School of Medicine and Yokohama Shimin Hospital. Tokyo and Yokohama

It has been well recognized that bone scan is a sensitive indicator of bony pathology but not so specific. We had already reported the value of tumor scan with Ga-67 citrate, in the differentiation of various bone lesions.

The purpose of this study is to examine the possibility of differential diagnosis of various bone pathologies, using bone scan and tumor scans with Ga-67 citrate and Tl-201 chloride.

35 patients with various bone lesions, including 13 malignant primary bone tumors, 10 metastatic bone tumors and 12 benign bone lesions, were examined by bone scintigraphy and tumor scintigraphy simultaneously.

The active accumulation on bone scans was observed in 32 (91.4%) of 35. In the same cases, to which three different scanning agents were administered, the avid accumulation on these three scans was shown in 10 (76.9%) of 13 malignant bone tumors, 5 (50%) of 10 metastatic bone tumors and 2 (16.7%) of 12 benign bone tumors and other lesions.

The results showed that the avid accumulation on the three different scans suggests high possibility of malignant bone tumors. The additional efficacy in the differential diagnosis has been shown as the avid accumulation on three different scans.

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ABNORMAL ACCUMULATION OF RADIONUCLIDES IN THE SKULL. K. Yatomi, K. Suzuki and T. Ishibashi. Metropolitan Ebara and Komagome Hospitals. Tokyo.

From April 1980 through April 1980, 1196 cases of bone scintigrams were studied with special respect on abnormal accumulation in the head. Out of 1196 cases, 153 cases with abnormal findings were found. Seventy two cases of which were widespread bone metastasis. Post operative accumulation after craniotomy was 16 cases, and abnormal accumulations in tooth caries were 23 cases. The remaining 42 cases of abnormal accumulation in the cranial bones were as follows; 22 cases underwent progression of malignancy, and 17 cases remained unchanged. Among malignant metastases with abnormal accumulations, lung cancer patients showed more cases of progression, while those of breast cancer showed less. In 6 cases, orbital accumulation of unknown mechanism were found.