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EVALUATION OF SURVIVAL OF GRAFTED JOINT WITH BONE SCINTIGRAPHY: EXPERIMENTAL STUDIES USING RATS.

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Bone scintigraphy is useful for evaluation of the union of the bone fracture or grafted bone. However, Mechanism of bone uptake has been yet unclear. And the effects of vascularization and histocompatibility on survival of grafted joint have not been enough estimated.

We transplanted bone including knee joint and evaluated effect of vascularity on autografts and major histocompatibility on allografts with bone scintigraphy.

We used rats which were different in major histocompatibility, and transplanted according to three methods, vascularized autografts, non-vascularized autografts and non-vascularized allografts.

After transplantation, we took bone scintigram with Tc-99m MDP and stored data by computer system. We calculated uptake ratio of knee and femur. The studies were performed every weeks from 1 to 15 weeks after transplantation. Bone uptake ratio changed in time and there were different patterns among three groups.

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DYNAMIC AND STATIC SCINTIGRAPHY OF HIP JOINTS WITH Tc-99m-MDP.

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Quantitative assesment of bone scintigraphy was performed in patients with and without hip joints disease. In dynamic phase, bone scintigraphy was performed during 5 min. after intravenous injection of Tc-99m-MDP. In late phase, scintigraphy was obtained 3-4 hours after injection. Then, %Dif. of hip joints was calculated in each phases. %Dif. was below $\pm 10\%$ in normal cases. But in inflammatory disease, %Dif. was over $\pm 20-30\%$. And %Dif. of other conditions were examined.

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ROLE OF BONE SCINTIGRAPHY IN THE MANAGEMENT OF PATIENTS WITH SOFT TISSUE TUMOR.

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Bone scans using Tc-99m MDP were performed on 56 patients with soft tissue tumor.

The results are as follows

- 1) The accumulation of Tc-99m MDP was detected in large tumors with hypervascularity and in tumors with calcification.
- 2) Only when the tumor invaded the periosteum of adjacent bone, the accumulation was detected in the bone. So the bone scan is useful in planning of surgery.
- 3) In 43 patients with malignant soft tissue tumor, 3 patient had bone metastasis preoperatively.

And all these 3 patients had also pulmonary metastasis simultaneously.

So If the patient has lung metastasis the bone scan should be performed for detecting bone metastasis.

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THALLIUM-201 SCINTIGRAPHY IN BONE AND SOFT-TISSUE TUMORS. K. Nishizawa, T. Watanabe, Y. Nakamura and T. Shinozaki. Hirosaki University, Hirosaki.

Seventy-four patients (pts.) with bone (BT) and soft-tissue tumors (STT) had Thallium-201 (Tl) scans. Tumors were demonstrated by Tl in 24 pts. (75%) of BT and in 33 pts. (79%) of STT. The positive rate in all cases was 77%. As histologically, 10/15 (67%) in benign BT, 10/13 (77%) in benign STT, 11/11 (100%) in malignant BT, and 16/17 (94%) in malignant STT.

Tumor uptake of Tl was compared with contrast enhancement (CE) in CT scan and with tumor vascularity in angiography. Significant correlation were recognized between tumor uptake of Tl and CE of tumor, tumor vascularity in angiogram.

Some tumors showed disparate result in Tl scans and CT or angiography, suggesting complex mechanism of tumor concentration of Tl. In sixteen pts., 4 hours delayed scans were done. Poor washout of Tl, recognized mainly in malignant tumors, seemed to have diagnostic usefulness predicting malignancy of BT and STT.