

siderably manifested abnormalities by scintigraphy.

A hundred and sixty-nine patients were performed the scintigraphy with  $^{99m}\text{Tc}$ -MDP for the detection of bone metastasis, and 52 of them showed abnormalities. In twenty-three of 118 patients of breast cancer, the scintigrams showed abnormalities and definite metastases were confirmed in 13 patients. Patient with prostatic carcinoma and lung cancer also showed abnormal-

ities in high ratio.

We have already experienced bone scintigraphies of more 1,000 patients using  $^{99m}\text{Tc}$  EHDP, and noticed that, in comparison with  $^{99m}\text{Tc}$  EHDP,  $^{99m}\text{Tc}$  MDP is more suitable agent of scintigraphy for the skeletal survey of patients with malignant tumors, because of its rapid blood clearance and urinary excretion.

### **Evaluation of the Clinical Utility of $^{99m}\text{Tc}$ -MDP Bone Scan Compared with PYP and EHDP**

Shinichiro KAWAGUCHI, Masahiro IIO, Hajime MURATA, Kazuo CHIBA, Kengo MATSUI,  
Hideo YAMADA, Yikihiko OOISHI, Akira KIDO, Akira KODERA,  
Shigemichi YONAMINE, Masayuki YATANI, Hatori YORINO  
*Department of Nuclear Medicine and Radiological Sciences, Tokyo  
Metropolitan Geriatric Hospital, Itabashi, Tokyo*

The purpose of the present study is to evaluate clinically bone images obtained by using currently available three bone scanning agents of  $^{99m}\text{Tc}$ -MDP (methylene diphosphonate), EHDP (ethane hydroxy diphosphonate) and PYP (pyrophosphate). The image itself is remarkably improved by Micro Dot Imager whole body  $\gamma$  scanner compared with 3 inch whole body scanner.

The results were as follows: 1) The quality of the images were defined into three categories. By using  $^{99m}\text{Tc}$ -MDP 59% of good, 28% of fair and 14% of poor images were obtained. By using  $^{99m}\text{Tc}$ -PYP 14% of good, 50% of fair and 36% of poor images were obtained. By using  $^{99m}\text{Tc}$ -EHDP no good case, 57% of fair and 43% of poor

images were obtained. 2) The half time of blood clearance of  $^{99m}\text{Tc}$ -MDP, EHDP and PYP were  $16 \pm 4$ ,  $17 \pm 7$  and  $35 \pm 3$  minutes respectively. 3) The 24 hours urinary excretion rate of  $^{99m}\text{Tc}$ -PYP, MDP and EHDP were  $40 \pm 19$ ,  $47 \pm 19$  and  $60 \pm 16\%$  of injected doses respectively. 4) A case of prostate cancer was scanned by using three bone scanning agents. The quality of the image of  $^{99m}\text{Tc}$ -MDP, PYP and EHDP were good, fair and poor respectively. 5) Generally speaking the aged cases showed frequently unsatisfied bone scans than the cases of adult.

In conclusion, the bone scan using  $^{99m}\text{Tc}$ -MDP could provide us with better quality image than those using  $^{99m}\text{Tc}$ -PYP or EHDP.

### **Scintigraphy with $^{99m}\text{Tc}$ -Methylene Diphosphonate**

Kozaburo KAWAHIRA, Yoshihiko OSHIUMI, Chikashi NAKAYAMA, Itsuna KAMOI,  
Yuichi ICHIYA, Kanehiro HASUO, Kazunori MORITA and Keiichi MATSUURA  
*Department of Radiology, Faculty of Medicine, Kyushu University, Fukuoka*

The use of  $^{99m}\text{Tc}$ -Methylene diphosphonate (MDP) for bone scanning has become increasingly common. This is the report of our experience using this agent. The accumulation rate of this agent in each bone increased markedly until 2 hours after administration, and reached a plateau at 2-3 hours

except for the spine which showed a minimal increase then.

The count rate of each ROI in the bone showed a plateau at 2-3 hour, but that of kidney or background was decreasing. This suggests the adequate timing for the bone scanning to be at