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EVALUATION OF BONE SCINTIGRAPHY IN PATIENTS WITH LUNG CANCER. T.Kitano, Y. Fukunaga, M.Takada, T.Nakasuji, M.Tanahara, Y.Toyota, T.Miyagawa. Osaka Prefectural Habikino Hospital.

The usefulness of Tc-99m scintigraphy was evaluated in 239 patients with advanced lung cancer (183 males and 56 females) for the detection of bone metastasis. Of 239 cases studied, 78 cases (32.6%) showed positive bone spot: 43.5% (30/69) in adeno. ca., 29.7% (22/74) in squamous cell ca., 22.7% (23/83) in small cell ca. and 23.1% (3/13) in large cell ca. The mean number of hot spot in positive cases was: 3.8 in adeno ca., 2.3 in squamous cell ca., 2.6 in small cell ca., and 1.3 in large cell ca. Our results indicate that adeno carcinoma was a more frequent and multiple bone metastasis than other cell types of lung cancer.

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DEVELOPMENT OF INSTRUMENT SYSTEM OF DPA USING A SCINTILATION CAMERA. T.Tomomitsu, M.Fukunaga, K.Nagai, S.Yanagimoto, A.Muranaka, M.Mitsumori, S.Ono, N.Otsuka, R.Morita and Y.Nishii. Kawasaki Medical School and Chugai Pharmaceutical Company.

Quantifying bone mass is possible to aid in the diagnosis of metabolic bone disease and to follow the course of treatment. Various non-invasive methods have been developed for quantifying bone mass in patients. We have developed new instrument system of DPA using scintillation camera for determination of bone mass in 3rd lumber spine. The detector of the system consisted of NaI crystal and 19 photomultiplier tubes. The reproducibilities of the system in phantom and normal subject were found to be good. The advantage of our system over the other system using scintiscanner was as follows; the amounts of Gadolinium-153 used in our system was one tenth of that required for the other system and the acquisition of lateral imaging in the spine was easier in our system.

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DEVELOPMENT OF INSTRUMENT SYSTEM OF DUAL PHOTON ABSORPTIOMETRY USING A GAMMA CAMERA: CLINICAL EVALUATION BY THIS NEW SYSTEM. K.Nagai, M.Fukunaga, T.Tomomitsu, S.Yanagimoto, M.Mitsumori, S.Ono, N.Otsuka, R.Morita and Y.Nishii. Kawasaki Medical School, Kurashiki and Chugai Pharmaceutical Co., Tokyo.

We developed a new instrument system of dual photon absorptiometry (DPA) using a gamma camera, in order to quantify the bone mass in lumbar spine. In this study we have performed the clinical evaluation of this system for bone mineral density (BMD) of the 3rd lumbar vertebrae (L3) in 86 cases of healthy subjects and in 70 cases of patients with various diseases. Our conclusions are as follows; 1. In healthy subjects, bone mass of L3 measured by DPA has good correlations with that of L3 by quantitative computed tomography and with that of distal radius by single photon absorptiometry (SPA). 2. In normal males, the decrease of the BMD value, as a function of age, measured by DPA is greater than that by SPA. In normal females, the decrease of BMD by DPA is earlier than that in normal males. 3. BMD measurement of L3 by DPA is useful in evaluating for bone mass in patients with various diseases, and in follow-up study. In conclusion, BMD measurement in trabecular bone by DPA could be helpful to clarify the skeletal pathophysiology in metabolic bone diseases.

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EARLY EXPERIENCE OF DUAL-PHOTON ABSORPTION-METRY. N.Katsuyama, H.Moromizato, K.Miyagawa, M.Ozaki, H.Sueyama, Y.Ohta, T.Sekiya and M.Nakano. Ryuky University School of Medicine, Okinawa.

Dual-photon absorptiometry utilizes an isotope (Gd-153) with two energy levels (44 and 100 KeV), thereby eliminating the need for uniform soft-tissue cover the bones of interest. Scans of the lumbar vertebra are most useful for early diagnosis and management of most types of metabolic bone diseases, including osteoporosis. Proximal femur scans are also useful to know the fracture risk for high aged people. We studied 18 scans of lumbar spine and femur of 18 female normal volunteers (20-60 year). Their bone mineral density (BMD) shows a tendency of diminution with aging. The average of BMD of lumbar spine (L1-4) is 1.2 g/cm² (1.0-1.4), and femur one is 0.9 g/cm² (0.7-1.2). A well correlation is present between the BMD of lumbar spine and femur. Two physicians separately analyzed same datas of 18 lumbar spine scans. The average of coefficient of variation was 1.8 %.

We are going to make normal datas of Japanese BMD of lumbar spine and femur. And we study for early diagnosis and management of osteoporosis and other metabolic bone diseases.