

Two Patients with Osteogenic Tumor with Negative Image of Part of the Tumor Using ^{99m}Tc -Pyrophosphate and ^{67}Ga -Eitrate Scintigram

Takazu SEKI*, Keiichi FURUMOTO** Yoshio HISANO***, Atushi IGARASHI****

*Center of Radio-isotopes, Nippon Dental University, Tokyo

**Department of Radiology, Nippon Dental University, Tokyo

***Department of Oral Surg., Nippon Dental University, Tokyo

****Department of Dent. and Surg., National Medical Center Hospital

A combined scan with ^{99m}Tc -pyrophosphate and ^{67}Ga -citrate is used in the diagnosis of diseases in the oral cavity.

In the present study, the findings in the 2 scintigrams and the operative findings were compared in two patients with osteogenic tumor with a negative image of part of the tumor.

Case I. K.K., 17 year old male with osteogenic sarcoma

The tumor filled the left maxillary sinus and 1/3 of the tumor originating from the maxillary molars region was exposed to the oral cavity. In both scintigrams, the upper 1/2 gave a positive image, whereas the lower 1/2 a negative image.

Case II. K.K. 30 year old female with chondrosarcoma

The tumor recurred after removal of the primary tumor. A hen's egg sized tumor was found on the lower edge of the right orbit. A part of the tumor was exposed to the oral cavity along the zygomatic bone.

In the two scintigrams, the tumor on the lower

edge of the orbit gave a positive image, but the the tumor ranging from the lateral edge of the zygomatic bone to the oral cavity gave a negative image.

The following characteristics are shared by these two patients with a negative image of part of the tumor in the scintigram.

1. Only osteogenic tumors gave such findings.
 2. A negative image appears in a part of the tumor after a rapid enlargement of the tumor mass.
 3. The part of the tumor with negative image surrounds the part not directly adjacent to the bone tissue.
 4. Histopathological degeneration of the part of the negative image was present but not very pronounced.
- For the production of a positive scintigram, the blood stream through this portion appears to play some role.
5. In osteo sarcoma, the formation of bone trabeculae are almost completed.

Scintigraphic Findings of Bone Disease as Obtained by Means of PHO/CON Tomographic Scintiscanner

S. OMORI*, Y. ITAMI*, K. KAWAKAMI**, N. KATSUYAMA**

*Department of Orthopaedic Surgery, **Department of Radiology,

The Jikei University of School of Medicine, Tokyo

We have done bone scintigrams of various bone diseases by the use of a PHO/CON tomographic scintiscanner (Seale Radiographic Co.) which has been in operation at our university hospital since last year. The purpose of this paper is to present the cases with reference to the diagnostic value of this scintigraphic device in bone diseases.

The PHO/CON tomographic scintiscanner com-

bins the outstanding features of scinticamera and scintiscanner, makes use of a miniature scinticamera as detector and is driven in a similar moden in the case of conventionally used scinticameras. With this device, a scanning time of about 40 min is required for obtainig bone scintigrams of the entire skeleton and on each exposure 12 section tomograms are provided.

Abnormal radioisotope concentrations in the skull, thorax or the pelvis have been thus far difficult to interpret properly. PHO/CON, with 12 body section scintigrams it provides, has made it possible to obtain a three-dimensional view of areas of abnormal radioisotope concentration and easily distinguish them from hot areas representing pathological processes and thus has proven of value in enhancing diagnostic efficiency. In conclusion, this PHO/CO tomographic scintiscanner

has the following advantages over the conventionally used ones:

- (1) It permits to delineate multiple lesions distinctly which would otherwise be seen overlapping.
- (2) It can be used more efficiently in the localization of lesions in the skull, thorax or pelvis.
- (3) It also affords greater effectiveness in the evaluation of therapeutic course.
- (4) It is effective in the diagnosis of a pseudarthrosis.

Application of Bone Scintigraphy to Disorders of Spine

R. HOSHINO*, H. WATANABE*, M. HASUE* and T. KIDA**

**Department of Orthopaedic Surgery Fukushima Medical College*

***Department of Radiology Fukushima Medical College*

We applied bone scintigraphy to 48 cases of spinal disorders, which were spondylitis (18 cases), bony metastases of malignant tumors (6 cases), spinal tumors (5 cases), anomalies (3 cases) and ossification of spinal ligament (2 cases). It was difficult to distinguish spondylitis tuberculosa from spondylitis purulenta on bone scintigraphy. Several cases of spondylitis demonstrated pathologic conditions in the kidneys such as defective or asymmetric radioactivity at the time of bone scanning.

In spinal tumor, chondroma of C₆ vertebra showed heavy radioactivity, but non-secretory solitary myeloma revealed normal radioactivity. In cases of anomalies of spine (synostosis and os odontoideum) and ossification of spinal ligament (posterior longitudinal ligament of cervical spine and yellow ligament of thoracic spine), there were no abnormal bone uptake. Bone scintigraphy is one of the useful methods for diagnosis, treatment and evaluation of prognosis in spinal disorders.

Limb Paralysis and Bone Scintigram (The Second Report)

K. TOKUNAGA*, E. SUNADA*, A. SHINOZUKA*, T. HISHIDA*

M. TAKEUCHI** and T. MARUYAMA***

**Department of Radiology, Showa University School of Medicine*

***Department of Nuclear Medicine, ***Department of Orthopedics, Atami Sogo Hospital*

We have already reported that, in thirty patients suffering from paralysis of limbs due to cerebrospinal disorder, the more severely osteoporosis advances, the more phosphates are taken up in the bone of osteoporosis. The present report is to find a correlation between the incorporation of phosphates and blood supply in the affected bones.

Either of the posterior paw of a rabbit was fixed with the gyps, which was taken off after three weeks' fixation. Every four days after removal of gyms, we obtained bone scintigrams using ^{99m}Tc-phosphate and accumulation curves of intraven-

ously administered ^{99m}Tc-albumin on the area of osteoporosis. ^{99m}Tc-phosphate as well as ^{99m}Tc-albumin was incorporated in the bone of osteoporosis in greater amount than in the unaffected side of bone. (The differences in amount of uptake of phosphate and of albumin between the pair of paws gradually decreased.) We also studied with fourteen patients of osteoporosis due to cerebrospinal disorders. In the patients of over one year's duration of paralysis, the affected side of bone took up less ^{99m}Tc-albumin than the unaffected side of bone. On the other hand in the