

COMPARATIVE STUDIES ON CT SCAN WITH
SCINTIGRAPHY AND PLAIN X-RAY PHOTOS IN
SKELETAL DISEASES

Tsunehiko Sakata, Hirobumi Ishida,
Susumu Okahashi, Koichi Yamasaki
and Hiroaki Akagi

Department of Radiology,
Osaka Medical College, Takatsuki, Osaka.

For the detection of skeletal diseases, comparative studies on CT scan with bone scintigraphy and plain x-ray photos were performed in 132 cases and the results were discussed.

I. Method :

1) Bone scintigraphy : Ten mCi of Tc-99m phosphorous compounds were injected 2-3 hours before the photos with PHO/GAMMA HP. 6406 or PHO/GAMMA LFOV. And the findings were classified into positive, equivocal and negative by density of films.

2) CT scan : EMI-scanner CT 5005/12 was used and Ca concentration in the bone was calculated and printed out by the same computer system.

3) Plain x-ray photos : P-A projection and other projections were taken.

II. Results :

1) Total 240 lesions of the skeletal system in 132 cases were found by the examinations : 232 lesions were by bone scintigraphy, 75 in 111 lesions studied by CT scan and 122 in 210 by plain x-ray photos. False negative lesions were 8/240 by bone scintigraphy, 36/111 by CT scan and 88/210 by plain x-ray photos.

2) Ninety-two lesions were studied by 3 methods on the same lesions (primary bone tumors were 6, metastatic bone tumors 65 and others 21). In 65 metastatic bone tumors detected by bone scintigraphy, 20 lesions had no evidence by other examinations. And lesions on which abnormal findings were pointed out by CT scan but not by plain x-ray photos were 8, and by plain x-ray photos but not by CT scan were 3.

3) The correlation of Ca concentration with findings showed Ca concentration were reflected better by CT scan than by plain x-ray photos.

4) CT images of metastatic bone tumors were classified.

I. Non-destructive type : Outline of the bone is kept clearly. (23 lesions)

a. Hardening type : High density area without low density appears inside of the bone. (10 lesions)

b. Doughnut type : Ring-like low density area surrounded with high density appears inside of the bone. (4 lesions)

c. Fleck type : Irregular flecks with high density appear inside of the bone. (9 lesions)

II. Destructive type : Outline of the bone is irregular and partly destructed, sometimes low density in the bone. (19 lesions)

III. Conclusion

By the detectability of skeletal diseases, bone scintigraphy was better than CT scan or plain x-ray photos in the routine examination.

CT scan has a possibility to diagnose nature and extension of the lesion in future.

- continued -