EVALUATION OF ABNORMAL FINDINGS OF BONE SCINTIGRAMS (I). N. Tonami, K. Hisada and H. Seto. The Department of Nuclear Medicine, School of Medicine, Kanazawa University.

2077 bone scintigrams with Tc-99m phosphate compounds were evaluated to select specific abnormal findings and Gamut approach was performed. This time 5 specific findings were evaluated:
1) Extended activity of the bone of the extremity
2) Extended activity of the entire extremity
3) "Cold lesion" appearance
4) Bilateral increased activity at (around) the joints of the extremities
5) Unilateral increased activity at (around) the joints of the extremities

Diseases and conditions in each finding were reported and clinical usefulness of the Gamut approach was discussed.

ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRIC DETERMINATION OF CALCIUM, PHOSPHORUS, IRON, ZINC, AND STRONTIUM IN HUMAN BONE. A. Onoda*, T. Matsubayashi* H. Itoman* and S. Masumi* Dept. of Radiology† Dept. of Orthopedic Surgery‡ Kitasato University School of medicine, Sagamihara.

Ten cases with various forms of bone disease were analysed for phosphorus, calcium, iron, zinc, and strontium by energy dispersive X-ray fluorescence spectrometry. Apparatus used in these studies were Kevex 801 type energy dispersive X-ray fluorescence analysis equipments with S(L i) detector and second target exciting method, and Kevex 5000 series X-ray energy spectrometer. Bone specimens were dissolved in minimum volume of analytical grade nitric acid, and diluted with redistilled water. The resulted solution was applied to X-ray fluorescence method. The intensity of Kα line emitted was measured and the element content was determined from calibration curve. Molybdenum and molybdenum-alumnum were chosen as the second target and filter, respectively.

Total calcium concentration for specimens varied between 55.5 and 167.2 mg per gram flesh bone, and phosphorus concentration ranged between 22.0 and 173.5 mg per gram of flesh bone. The ratio of phosphorus to calcium for 10 specimens ranged from 0.39 to 0.92.


Ninety eight bone scans and 43 Ga-67 citrate tumor scans performed to 66 patients, including 42 with lung cancer, 5 with esophageal cancer and 19 with other malignancy, were evaluated during or after radiation therapy with the irradiation field involving thoracic and lumbar spines. The correlation among the spinal uptake of radioactivity in the radiation field, the irradiation dose and the interval after radiotherapy was investigated. It was the result that 33 of 98 bone scans(34%) showed "decreased" and 25 of 41 bone scans(61%) performed more than 3 months after radiotherapy showed "decreased" spinal uptake. In this group of 41 bone scans, 16 of 21 bone scans(76%) with more than 5000 rads showed "decreased" spinal uptake. None of cases were observed returned to the usual spinal uptake from "decreased" in any periods after radiotherapy, although 8 cases got into "equilibrated" during follow up. Twenty five of 42 cases(58%) with Ga tumor scans, which were performed in the earlier periods and with less dose as compared with bone scans, showed "decreased" spinal uptake. Three cases with "decreased" spinal uptake on bone scans and 2 cases showing discrepancy of the spinal uptake between bone scan and Ga tumor scan were demonstrated.