STUDIES ON BONE METABOLISM BY BONE SCINTIGRAM AGENTS.  T. Seki  Institute of Radiisotopes, Nippon Dental University, Tokyo

This report is regarding the studies on the bone metabolism by bone scintigram agents. The bone scintigram agents were used with MDP(P-32), EHDP(P-32), Pyrophosphate(P-32), Citrate(Ca-45), and EDTA(Ca-45). The bone metabolic agent was used with H3PO4(P-32) and CaCl2(Ca-45). The Animals were used with a DDM mouse of 5 weeks. The measurement time was taken from 5 minutes to 16 hours after injection bone seeker agents. The measurement part of a bone was the epiphysal part, the diaphysal part and the Callus (14 days after fracture) by tibia. Results:
1) Citrate and Ca-45(CaCl2) were like bone metabolic agents.
2) Pyrophosphate and P-32(H3PO4) were like bone metabolic agents.
3) MDP and EHDP were the same bone metabolites.
But these agents were differ from Ca-45 (CaCl2) and P-32(H3PO4) metabolism.


We report 14 cases of extraosseous accumulation of Tc-99m phosphate complexes in the soft tissue tumor, such as primary lung cancer, hepatoma, neuroblastoma, liver metastasis from adrenal gland cancer and rectal cancer, lymph node from breast cancer and liposarcoma, from 993cases.
Fine calcifications were detected in 4 cases, necrosis detected in 8 cases, hypervascularity shown in 6 cases by Angiography, RI angiography and historical examinations. We suspected that the mechanism for extraosseous examination of tracers are related to the calcification(involving calcium in the damaged cells), necrosis and local hypervascularity.

CLINICAL ANALYSIS OF DIFFUSELY INCREASED Tc-99m-MDP UPTAKE IN BOTH KIDNEYS (HOT KIDNEYS). K. Katsumi, N. Tonami and K. Hisada  Department of Nuclear Medicine, Kanazawa University Hospital, Kanazawa

Patients with diffusely increased uptake in both kidneys (often referred to as "hot kidneys") on Tc-99m-MDP bone imaging were clinically evaluated. Among 201 patients reviewed, this finding was seen in 19 patients (0.63%): six with liver cirrhosis, three with diabetes mellitus, two with lung cancer, four with hematologic diseases, and four with other malignant diseases. Out of 19 patients only two showed clinically apparent renal dysfunction. Six patients showed increased serum iron level probably due to blood transfusion or liver dysfunction. Nine patients had received anticancer drugs. Two patients with liver cirrhosis also showed increased Ga-67 uptake in both kidneys. Possible causes of "hot kidneys" were suggested to be liver cirrhosis, diabetic nephropathy, iron overload, and anticancer drugs.

ACUMULATION OF 99m-Tc-PHOSPHORUS COMPLEXES IN THE SKELETAL MUSCLE Hernia, POLYMYOSITIS, AND ACUTE MYOSITIS. M.Hino, M.Fukunaga, C.Shigeno, I.Yamamoto, S. Bokoh, K.Morita, and K.Torizuka  Department of Nuclear Medicine, Kyoto University School of Medicine, Kyoto

Three cases of muscle uptake of 99m-Tc-phosphorus complexes are presented and discussed. Muscle damage by many causes are considered to be responsible to abnormal muscle tracer uptake. Case 1: a 28-year-old male was noted to show increased muscle uptake of tracer during bone imaging. The area of tracer accumulation corresponded to the location and extent of the herniated muscle tissue observed at surgery. Laboratory data were normal including serum calcium, phosphorus, alkaline phosphatase, and creatine phosphokinase. Microscopically muscle degeneration was observed without evidence of necrosis, hyperemia, or microcalcification. Case 2: a 26-year-old female demonstrated extensive tracer uptake in the muscles of bilateral thigh. On microscopy, fiber degeneration with predominantly mononuclear cell infiltration was noted. Case 3: after repeated excessive exercise(push-ups), a right-handed boy, aged 14 years, was referred for bone scan because of left arm pain. On bone imaging, there was diffuse uptake of radiotracer in the left arm muscles.