

Metabolism of Calcium in a Case of Hyperostosis Generalisata (Using ^{47}Ca)

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^{47}Ca -tracer studies in a patient with a very rare bone disease "Hyperostosis generalisata" is presented. This disease is characterized by active periosteal ossifications in long bones. Patient was 38-year-old male. Chief complaint was pain in both pelvic limbs. Clubbing fingers, BSG acceleration and high value of ASLO were recognized. The diagnosis of this disease was established by bone X-ray figures and histological figures of bone biopsy.

Method: The patient and a control volunteer without bone disease were maintained on low calcium diet, 130 mg/day, for 10 days before the balance and tracer studies. They were given $50 \mu\text{c } ^{47}\text{CaCl}_2$ intravenously. After injection, diet, blood, urine, stool stable calcium and ^{47}Ca were determined. The ^{47}Ca counting was done by a scintillation counter combined with a single channel γ -ray spectrometer which was set for 1.3 Mev peak of ^{47}Ca to exclude lower energy γ -ray of ^{47}Sc .

Metabolic balances of calcium were negative in both subjects. This fact is considered to be due to the low calcium diet. The fecal calcium excretion was smaller in this patient. As the fecal calcium is decided by the absorption and the secretion of calcium in the intestine, the endogenous fecal calcium was calculated by the method of Michael et al. In the patient of this case the endogenous

fecal calcium exceeded that of control subject. From these data, the intestinal absorption of calcium in this patient seemed to have been increased.

Miscible calcium pool, ^{47}Ca disappearance curve from serum and "Bone formation rate" were determined.

In this patient miscible calcium pool was calculated as 4.98 g (132mg/kg body weight) which was larger than 3.56g (54mg/kg) of control subject and which also exceeded the normal value 60-110mg/kg reported by Michael et al. The half life of this pool was 3.55 days and that was shorter than control 4.3 days.

On the basis of these data and fraction of ^{47}Ca excretion in urine and in stool, the "Bone formation rate" was calculated by times of 6.7g/kg/day of control subject the method of Haeney & Whedon. This value was 20.3mg/kg/day which was almost three and two times of 8-11mg/kg/day of normal range reported by Michael et al. This means the active ossification.

Summary: The results of these ^{47}Ca -tracer studies suggest that in this patient the intestinal absorption of calcium was increased, the miscible calcium pool was larger, the half life of it was shorter and so "Bone formation rate" was distinctly increased.

Changes of Various Dehydrogenases in Lymphatic Tissue by Radioisotope

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Histochemical demonstration of changes of various dehydrogenases in the human and animal lymphatic tissue was attempted at the administration of radioisotope.

Materials and Method:

(1) Animal Experiment; Rabbits weighing approximately 2 kg. were used. They were divided into three groups—1) control

2) receiving 90 microcuries (10,000,000 cpm) of ^{198}Au colloid in the hind legs 3) 60 microcuries (6,700,000 cpm) of ^{198}Au colloid in the same sites.

96 hours after the ^{198}Au colloid injection, Lymph nodes around iliac artery and aorta and in the supraclavicular region were removed along with spleen, liver, kidney and