

Experimental Studies on Radioactive Strontium-85

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Strontium-85 is one of the radioactive isotope which recently has been used frequently, for diagnosis of malignant tumor in the bone. The author investigated the accumulation of ^{85}Sr in various organs of animals depending on difference of their age. Following administration of ^{85}Sr to rats, they were killed and dissected at regular intervals. And the up-take of ^{85}Sr to rats, they were killed and dissected at regular intervals, and the up-take of ^{85}Sr in various organs, such as the femur, lung, liver, kidney, spleen, muscle and the blood, was measured.

Next, we investigated the influence of ^{60}Co irradiation on accumulation of ^{85}Sr in the femur.

The tele cobalt ranging from 2,000 to 8,000

R was irradiated to the left femur of adult rabbits. The picture of scintiscan of the irradiated femur was compared to that of the non-irradiated femur. The results are as follows.

At intervals of time, the accumulation of ^{85}Sr in the femur of the youngest rats showed the highest value and that of the oldest showed the lowest, and the accumulation of ^{85}Sr in the femur of the middle aged rats was found between these values them, but the degree of the concentration of ^{85}Sr in the bone, was much higher as compared with that in other organs.

It was noted that the degree of concentration of ^{85}Sr in the bone proved to be found slightly in the scintigram after 4,000R irradiation to left femur.

Evaluation of ^{85}Sr External Counting for the Diagnosis of Spinal Diseases

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Since 1966, we have been studying the clinical application of the ^{85}Sr external counting in the diagnosis of various diseases of the spine, especially of tuberculous spondylitis.

In this report, the measurements were made in twenty-seven patients with tuberculous spondylitis.

The patients were given $0.5\mu\text{Ci}$ of ^{85}Sr per kilogram of bodyweight intravenously. The external counting was done twice for two weeks by a scintillation detector with a 1.5 inch \times 1.0 inch NaI crystal. Twelve points along the mid-line of the spine were chosen as measuring points.

The results of measurements are as follows. Typical cases of active tuberculous spondylitis showed high uptake of ^{85}Sr on the vertebral foci at the first measurement and further increase of its activity at the second measurement. However, there were other patients in

the active stage in whom uptake of ^{85}Sr was high, but had a tendency of decrease at the second measurement. As a focus was healing, the local uptake of ^{85}Sr decreased progressively, and fell within the normal range in the healing stage.

From these facts, four stages were classified by isotope measurements.

Ascending stage (active): ^{85}Sr activity increases progressively.

Descending stage.

First stage (convalescent): ^{85}Sr activity decreases progressively and its value is higher than 1.7.

Second stage (quiescent): ^{85}Sr activity decreases progressively and its value between 1.7 and 1.3.

Invariable stage, healing): Value is lower than 1.3.

There was good correlation between the