

The Studies on the Developmental Process of the Experimental Osteogenic Sarcoma by ^{87m}Sr -Scintiscanning

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In our laboratory, the development of the experimental osteogenic sarcoma using Beryllium compounds had repeatedly been studied since 1955.

The tumor which were induced by the local injections of 0.5 cc of two percent saline solution of Beryllium carbonate into the femurs of the rabbit were resembled to the human osteogenic sarcoma.

The injection was done once a week and amount of Beryllium carbonate was 0.3 g in total.

We used the opposite femurs as the control.

X-ray and histological examinations and ^{87m}Sr -scintiscanning (external counting, profile scanning and area scanning) were done every months.

Now we would like to talk about comparative studies between X-ray, histological and scintimetrical findings of the developmental process of the tumor.

The conclusions were as follows;

By the X-ray examinations only slight periosteal thickenings were recognised at one to four months after the begin of injection.

The typical osteogenic sarcomas were seen in the shaft of the femurs between ten and twelve months.

By the histological examination tumor cells and tumorous osteoid tissue were observed in the specimens of ten months after the begin of injection.

The external counting by the injection of $500 \mu\text{Ci}$ of ^{87m}Sr at ten months after the begin of injection showed remarkably increased concentration of the isotope in the femurs which had repeatedly been injected with Beryllium carbonate.

The profile scanning showed high degree of uptake of the isotope in the femur into which Beryllium carbonate had been injected. We suggested that this finding indicated the process of the development of the tumor.

The area scanning showed high degree of uptake of the isotope even at three months after the begin of injection, and at ten months the concentration of the tracer increased much more. We would like to say that these findings determined the extent of the tumor.

^{111}In Tumor Scanning and Its Mechanisms Studied in the Rabbit

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One of the drawback of ^{67}Ga -citrate in its daily clinical application is its rather great affinity to infective lesions beside tumors. ^{111}In was studied to see if it possesses any merits over ^{67}Ga in these regards.

25 rabbits underwent intramuscular implantation of VX-2 epidermoid carcinoma in the left thigh. 7 days later, they were exposed

to $540 \mu\text{Ci}$ of ^{111}In -chloride intravenously. ^{111}In was cleared exponentially from the blood with $T_{1/2}$ of 9 hr in VX-2-rabbits. Up to 20% given dose of ^{111}In was excreted into feces in 7 days. Less was excreted into urine.

When autopsied and radioassayed, kidney, bone marrow, spleen, and liver deposited more of radioactivity than tumor. Ratio of tumor