

Bone Scintiscann with ^{85}Sr

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It has been known that strontium shows a similar metabolism as calcium.

From the observation that ^{85}Sr as well as ^{47}Ca accumulate in and around the area of bone tumor, osteomyelitis and fracture, there are various investigation based on its utilization.

In this paper, ^{85}Sr uptake in secondary degenerative coxarthrosis was studied by means of scintiscanning with special reference to investigation of relationship between radiographic findings and scintigram.

Methods: ^{85}Sr (20 —100 μCi) was injected intravenously in 13 patients of secondary degenerative coxarthrosis. On 7 and 14 days following injection, photoscitigram and coloscitigram were recorded. At the same time, rentogenogram was also taken from the focus of 2 meter high to skin surface. By superimposing of scanning data and radiograph, the localization of ^{85}Sr uptake in hip joints was studied.

Results: Correlationship between coxalgia and abnormal uptake of ^{85}Sr showed higher and both parameter were in accordance with

20 in 26 hips.

Correlationship between radiographic findings and abnormal ^{85}Sr uptake showed also closer and both parameter were in accordance with 22 in 26 hips.

However, correlationship between sclerosis on radiograph and ^{85}Sr uptake did not always show closer unity by analysing finding in superior, middle and inferior regions in acetabula and femoral heads.

Comments and summary: Area scanning with aid of ^{85}Sr in secondary degenerative coxarthrosis was studied and it was observed that data on scanning had closer correlationship between coxalgia and abnormal radiographic findings, however had not always between sclerosis on radiograph. These observation suggests us useful information can be provided by this method for the evaluation of clinical course in secondary degenerative coxarthrosis and this method can be available for assessment of prognosis and operative method and timing, and evaluation of operative effect in the future.

Scanning of the Osteomyelitis

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A comparative study of ^{85}Sr scanning and the clinical findings was done on 70 osteomyelitis patients.

Fifty four of these patients were hematogenous chronic osteomyelitis and others were chronic osteomyelitis due to fracture. Patients were recieved 1 $\mu\text{Ci/kg}$ body weight of ^{85}Sr

intravenously and scanned 24-48 hours after injection. Profile scanning was carried out at a screening procedure for localized bone disease. If there is asymmetry of ^{85}Sr concentration, the paticular areas were scanned with a standard scanner.

According to the findings of X-ray films

and scintiscans of these cases, (+) revealed some abnormal signs in the roentgenograms and (=) revealed negative skeletal roentgenogram. Fifty eight cases revealed (+) in both of roentgenograms and scintiscans, 12 patients revealed (+) in roentgenograms but (=) in scintiscans. All of the latter cases were hematogenous osteomyelitis but they were judged clinically to be cured. Count rate profiles of the extremities of each patient were recorded and areas of increased ^{85}Sr concentration were determined semiquantitatively. A ratio of the areas between involved and normal side of extremities was then calculated and classified into three groups as follows:

(+) revealed the ratio was from 1 to 1.49
 (++) revealed the ratio was from 1 to 1.49
 (+++) revealed over 2.0.

Relationship between the scintigraphic findings and blood sedimentation ratios of the 54

cases hematogenous chronic osteomyelitis revealed that scanning (—) cases showed 0-9 mm. of blood sedimentation ratios mostly, (+) cases showed 10-24mm. of 2/3 and 0-9mm. of 1/3. The scanning (++) cases also showed 10-49mm. of 2/3 and some of them showed over 50mm. of blood sedimentation ratios.

Conclusion

- (1) A comparative study of ^{85}Sr bone scanning and the clinical findings was done on 70 osteomyelitis patients.
- (2) A degree of concentration of ^{85}Sr in the bone lesions was depended upon the status of osteomyelitis.
- (3) Healing process of the osteomyelitis will be judged by X-ray findings, blood sedimentation ratio and other clinical findings in general speaking, but scintiscanning will be useful for this purpose.