III. Bone

The Role of ^{85}Strontium Photoscanning in the Detection of Abnormalities of the Skull and the Facial Bones

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Radiographic anatomy of the base of skull and the facial bones is often hard to be analysed because of their complicated structure and superimposition. Multiple radiographic projections including tomogram are required to assess the extent of the lesions.

The purpose of this study is to evaluate the value of ^{85}strontium photoscanning in cases of malignant tumor of the skull and the facial bones. Forty ^{85}strontium photoscans were compared with the radiographs (including tomogram) of corresponding cases.

Methods:

Scanning was performed 72 hours after intravenous injection of 70 μCi of ^{85}strontium chloride.

A shimadzu PHO/Dot scanner, of which NaI crystal was 5 inches in diameter, was used with 37 hole collimator and a pulse height analyser. Scanning speeds ranged from 60 to 70 cm per minute.

Results:

1. Good correlation between photoscans and radiographs were obtained. Abnormal radiographic findings (osteolytic and mixed in type) were seen in thirty-one of forty cases. Of these 31 cases 25 cases had positive photoscans.

2. The skull was divided into three parts; vault of the skull, base of the skull and the facial bones. Osteolytic lesions of the vault of the skull were lesily detected radiographically, but not scintigraphicaly. On the other hand, osteolytic lesions of the base of the skull and the facial bones were hard to be detected on the plain radiographs, but easy on photoscans.

3. ^{85}Strontium photoscans were useful to assess the extent of the bony infiltration of malignant neoplasms. This is quite true with malignant neoplasms of the nasopharynx.

A Basic Study on Bone Scanning. Difference on Scan Time

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For bone scanning, ^{85}Sr, ^{87m}Sr, and ^{18}F have been used. Although ^{85}Sr and ^{87m}Sr had scan time of 1–3 days and 1–3 hours, respectively, the scintigram was similarly interpreted. The authors studied the mode of uptake of Sr due to such a different scan time using the site of fracture in mouse with ^{89}Sr autoradiography and microradiography.

Results:

1) Sr uptake reached the maximum at the time of fusion of the fracture, according to the 3 hour value after fracture or the ^{87m}Sr