

Symposium II. Scintillation Camera

Clinical Uses of a Scintillation Camera in Comparison with a Scanner

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A scintillation camera is not always superior to a scanner when the quality of an image is concerned. The major reasons are explained that the resolving power of the optical system and electric matrix set within the detector head are lower than that of collimator. However, the single pinhole collimator makes a larger image when the target comes closer to it, raising the quality of image. We know that ^{131}I thyroid scintigrams by using the pinhole collimator are usually better than those of scanner in many cases. But the results of phantom experiments showed that the scan image was sometimes almost the same as that of camera in quality, suggesting that either larger dose of ^{131}I administration or longer scan time would much improve the scan image until it could reach that of camera in quality. In practice, neither larger dose of ^{131}I nor longer scan time should be restricted.

The body section scintigram would be ob-

tained by proper procedures of superimposing all the scan images which are taken from dozens of directions centering at a certain point of the target. The camera has a certain merit of making an image in much shorter time than the scanner does. And, the camera will offer the possibility of making the body section scintigram in a workable. The body section scintigram provides an information necessary for three dimensional display of the target organ.

The expansion of the visual field of camera is possible from utilizing the diverging collimator without accompanying a marked loss of sensitivity and angular distortion. But the decrease of resolution of image is inevitable with the enlargement of camera image.

The difficulties of delicate marking the body surface are shown by using a small radioactive source when the camera is used.

Thyroid Scintiphotos in Thyroid Diseases

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In 351 cases of thyroid disorders, ^{131}I thyroid scintiphotos were made by scintillation camera (Nuclear Chicago) equipped with pinhole collimator, 24 hours after oral administration of 50 microcuries ^{131}I .

(1) In hypothyroidism, which showed diminished thyroid ^{131}I uptake, it was difficult to make scintigram by scintiscanner. The thyroid gland of hypothyroid patient was

visualized in thyroid scintiphoto by long time exposure for camera.

(2) Thyroid scintiphotos were compared in nonfunctioning thyroid nodule, which the histological findings were known after thyroidectomy. It was difficult to differentiate thyroid cancer from adenoma by thyroid scintiphotos.

Thyroid scintiphotos, which were obtained