Reducing the Cost of Scintigraphy

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The gamma camera is now an extremely widely used clinical instrument and, although standard photographic methods are used, the chief means of recording scintigraphs remains Polaroid film. This is because of the overwhelming advantage of the immediate availability of the scintigraph. Because the cost of Polaroid film represents a significant part of the operating expense of a gamma camera, we have developed a technique which can reduce the amount of film used by almost 50%. It is conservatively estimated that for a moderate number of investigations the saving per annum on a single gamma camera alone is $600.

Our gamma camera (Nuclear-Chicago Pho/Gamma III) was supplied with a Polaroid camera with three lenses, each with a different aperture. It was felt that these gave a more than adequate range of density and that two exposures would be sufficient. One lens was therefore dispensed with and an attempt was made to accommodate a total of four exposures on one print. At first this was achieved by blanking off with tape the lens which produced the lower right exposure. (The three exposures were arranged roughly on the corners of an equilateral triangle.) One projection of an organ was obtained, the camera back moved the appropriate distance, and a second projection was recorded (Figs. 1A and B).

The results obtained were considered to be satisfactory, and a more permanent arrangement was therefore made. A new metal plate carrying the lenses was constructed omitting the third lens. The opportunity was taken to make a slight adjustment in the position of the lenses to optimize the use of the available print area. At the same time the apertures were adjusted so that the difference between the two exposures was greater than between two of the original three but not so great as between the darkest and lightest ones. It was found necessary to slightly reduce the size of the image on the oscilloscope, but the difference

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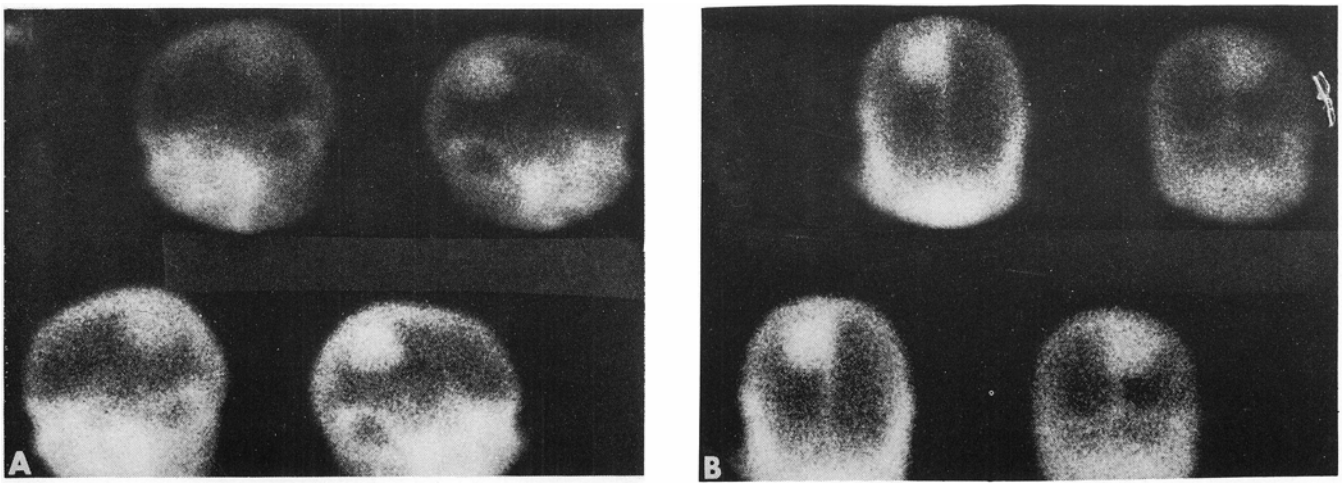

FIG. 1. Left and right lateral (A) and anterior and posterior (B) brainscintigraphs.

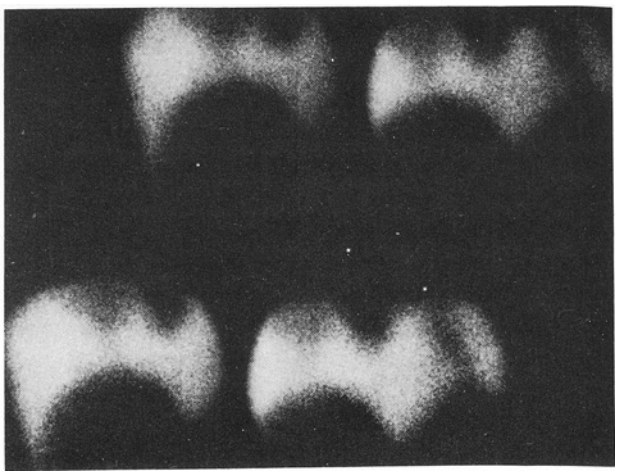

FIG. 2. Anterior views of liver and spleen on single Polaroid picture.

was barely discernible. The extreme edge at the top and bottom of the fields of view may be cut off, but this is insignificant and in any case may be seen on the other exposure. A further refinement made lateral adjustment of the camera back simpler. Extra locating holes were made so that the camera was set at precisely the correct position and could be moved exactly the right distance to give no overlap of the images laterally.

Typical results are shown in Fig. 1A and B. Comparison between left and right lateral views of a single organ is very convenient. If only a single lung or part of the liver can be obtained in a single view, then with a minimum of attention both lungs or the whole liver can be seen in the correct anatomical relationship on a single Polaroid print (Fig. 2).

The technique is presented as an easy method of affecting an economy in the use of the gamma camera. It has been in satisfactory operation on our camera for almost 2 years and should be applicable to most instruments although not to those with a single lens photographic camera without a significant sacrifice in image size.