deeper in phamtom, the higher sensitivity ratio was obtained compare with high resolution parallel hole collimator and the ratio becomes about two times at the depth of 4 cm. For the use of diverging, there is no difference at shallow region, but the sensitivity ratio decreases with depth gradually.

3. Resolution. For the use of conversing, the resolution is inferior to pin hole, but is similar or superior to high resolution paralel collimator. For the use of diversing the resolution is poor.

In conclusion, the use as converging collimator is profitable to the magnification of small part of kidney, brain and bone and the inspection of child's liver and dynamics.

A New Collimator for Scintillation Imaging

H. SAITO
Department of Rediology
T. TAMIYA, and A. MISHIMA
Central Radiological Service Division, Nagoya University Hospital

Lead (Pb) has been mostly used in making collimators for scintillation imaging so far. We planned the use of mercury (Hg) instead of Pb as a wall material, since Hg has higher density than Pb, and therefore the thickness of the collimator wall can be reduced. The half thickness for Hg was 0.2 mm and that for Pb was 0.26 mm against the 140 KeV gamma ray of ^{99m}Tc.

At first, we used the wood of matches (2.8×2.8 mm^2) in the place of hole, and Hg was filled in the gap as a wall material (0.8–1.2 mm thick). For the second Hg collimator, plastic pipes (1.75 mm diameter) and Hg wall (0.375 mm thick) were used. The first collimator was a converging collimator having its focus at 46 cm, and the second one was a parallel hole collimator. The height of the Hg wall of these collimators was 25 mm.

The resolution was 8 mm with the first, and it was 5 mm with the second collimator. The better resolution was expected by increasing the wall thickness and by reducing the diameter of the pipe by the further experiment.

The mass production of sharper and cheaper collimator without sacrificing the sensitivity can be done using Hg and iron pipe.

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