

about 3-6 hours after injection of 5 mCi doses, renal images were obtained more clearly than those of ^{197}Hg -chlormerodrin.

By these studies, renal scintigram with $^{99\text{m}}\text{Tc}$ -DMSA were better than those we previously obtained with ^{197}Hg -chlormerodrin and very high resolution image of the renal cortical structure can be obtained using $^{99\text{m}}\text{Tc}$ -DMSA.

To estimate renal cortical thickness, following studies were performed clinically. C/P ratio (RI counts of area of cortex/pelvis) were calculated from the digitalized scintigrams in the case of normal renal function and chronic nephritis or chronic renal failure. C/P ratio is 1.3–1.5 in the normal renal function, while 1.0–1.1 in the case of chronic nephritis or chronic renal failure and PSP index (15 min.) was correlated well with this C/P ratio.

In comparing a profile curve of ^{197}Hg -chlormerodrin with that of $^{99\text{m}}\text{Tc}$ -DMSA, the profile curve of $^{99\text{m}}\text{Tc}$ -DMSA showed high counts in the outer cortex.

Cortical thickness which represents the difference of peak counts of profile curves of these two radiopharmaceuticals was measured in various renal diseases. As a result, cortical thickness was 1.6–2.0 cm in the case of normal renal function, 0.8–1.2 cm in the case of chronic nephritis, 0.0–0.4 cm in the case of chronic renal failure.

By these methods, cortical thickness was estimated quantitatively and furthermore, cortical image were obtained by subtraction method of these two scintigrams.

In conclusion, it was suggested that cortical morphology and function were estimated by combination of two radiopharmaceuticals.

Clinical Studies on Renal Function with Scinticamera — $^{99\text{m}}\text{Tc}$ -DMSA Renoscintigraphy: Early Image—

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We reported that $^{99\text{m}}\text{Tc}$ -DMSA renoscintigraphy was superior to static renal cortical image in late time. We obtained early image using $^{99\text{m}}\text{Tc}$ -DMSA immediately after injection. And after two hours, we obtained late image. Using early image and late image, we could discriminate renal cyst from renal cancer. In renal cyst, early image and late image are projected as cold spot. In renal cancer, early image are projected as vascular phase and late image are cold spot. In early image, we obtained $^{99\text{m}}\text{Tc}$ -DMSA renogram. We studied

correlation between $^{99\text{m}}\text{Tc}$ -DMSA renogram and ^{131}I -Hippuran renogram. We knew that T 1/2 in $^{99\text{m}}\text{Tc}$ -DMSA renogram curve was good relation of MTT in ^{131}I -Hippuran renogram. We reported that renal uptake of $^{99\text{m}}\text{Tc}$ -DMSA was good relation of RPF in ^{131}I -Hippuran Renogram. We knew that renal uptake in early image was good correlation of renal uptake in late image.

Both early image and late image are useful in clinical renal studies.