

## Reappraisal of Tc-99m DMSA scintigraphy for follow up in children with vesicoureteral reflux

Eriko TSUKAMOTO,\* Kazuo ITOH,\*\* Koichi MORITA,\* Chietsugu KATOH,\* Kunihiro NAKADA,\* Katsuya NONOMURA,\*\* Hidehiro KAKIZAKI,\*\* Tomohiko KOYANAGI\*\* and Nagara TAMAKI\*

*\*Department of Nuclear Medicine and \*\*Department of Urology, Hokkaido University School of Medicine  
\*\*\*Department of Radiology, Sapporo JR General Hospital*

We reviewed Tc-99m DMSA scintigraphy in children with vesicoureteral reflux (VUR) in order to assess whether repeated Tc-99m DMSA scans are necessary for the follow up of these patients. Ninety-seven children who were followed up for more than one year (1–7.4 years, average 2.8 years) after the first DMSA scan were included in the study. Fifty-one patients had been diagnosed as primary VUR and 46 as secondary VUR. Age at the first examination ranged from 0 to 14 years (average 5.1 years). Planar images were taken 2 hours after injection. The % renal uptake per injected dose (%RU) was calculated from posterior images. Kidneys in 11 patients (11.3%) changed morphologically during the follow up. Of these, new photon deficient areas (PD) were detected in only 4 patients (4.1%). All of these 4 patients had neurogenic bladder and were managed with self-catheterization. Of the remaining 7 patients, cortical thinning progressed in 5 patients (5.2%) and PDs resolved in 3 patients (3.1%). In one of these 7 patients, PD resolved in one kidney and cortical thinning progressed in the contralateral kidney. Of 97 patients reviewed, % RU decreased more than 20% during the follow up in 6 patients (6.2%). All were diagnosed as secondary VUR due to neurogenic bladder. % RU decreased only in the contracted kidneys at the initial scan. Two of them underwent renal transplantation because of severe renal failure. In conclusion, new PD rarely developed and % RU decreased in only a few patients during the follow up of children with VUR. Repeated Tc-99m DMSA scintigraphy therefore seems to have little benefit in the follow up of children with VUR. It should be performed in selected patients with high risk of urinary tract infection or renal failure.

**Key words:** Tc-99m DMSA, vesicoureteral reflux, urinary tract infection