

Tc-99m PAH RENAL SCINTIGRAPHY: CLINICAL STUDIES

Jakšić E¹, Beatović S¹, Djokić D², Janković D², Lezaić V³, Han R¹

¹Institute of Nuclear Medicine Clinical Centre of Serbia, Belgrade, ²Vinča Institute of Nuclear Sciences, Belgrade, ³Institute of Urology and Nephrology Clinical Centre of Serbia, Belgrade

AIM: Tc-99m p-aminohippuric acid (Tc-99m PAH) is a new radiopharmaceutical prepared from a lyophilized kit by the addition of sodium pertechnetate. Each vial contains PAH, the calcium three sodium salt of DTPA and stannous chloride in an inert atmosphere. Our previous animal studies using Tc-99m PAH have indicated that it is rapidly secreted by the kidneys with tubular secretion and provides renal images of satisfactory quality. The aim of this study was to gain clinical experience in using Tc-99m PAH as renal imaging agent.

MATERIAL AND METHODS: Renal dynamic scintigraphy was performed in 10 potential kidney donors and 5 patients with suspected obstructive nephropathy. Clearance measurements were performed with ten plasma samples withdrawn between 2 and 120 min post injection. The study was repeated with Tc-99m MAG3 several days later for comparison. Time/activity curves, functional ratios, clearance values and excretion patterns were analyzed.

RESULTS: The mean values of time to peak activity and the time from peak to 50% activity in healthy subjects for Tc-99m PAH (3.7 ± 0.9 min and 6.9 ± 2.7 min, respectively) and Tc-99m MAG3 (3.6 ± 0.8 and 6.8 ± 2.2 min, respectively) did not show significant difference. The mean value of Tc-99m PAH clearance (186.9 ± 12.2 ml/min) was significantly lower in comparison to Tc-99m MAG clearance (303.9 ± 19.5 ml/min). There was no significant difference in renograms and semi-quantitative indices between Tc-99m PAH and Tc-99m MAG3 studies in patients with suspected obstructive nephropathy. Clearance values of two tracers were concordant to those obtained in healthy persons.

CONCLUSION: Our results confirmed good uptake and drainage of Tc-99m PAH in healthy persons as well as in patients with renal disorders, indicating its usefulness for routine renal scintigraphy. However, Tc-99m PAH clearance could not be used for the estimation of renal plasma flow.