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A large renal pelvic diverticulum, presenting incomplete excretion during Tc-99m MAG-3 scintigraphy and tracer accumulation on Tc-99m DMSA scintigraphy; a case report

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This case report illustrates the dynamic and static renal scintigraphic images of a patient with an unusual large diverticulum of the renal pelvis. The initial diagnosis by intravenous pyelography (IVP) and ultrasonographic (US) examination was a renal pelvic diverticulum of the left kidney, and the patient was referred to the nuclear medicine department for exploration of the effect of the pelvic diverticulum on renal functions.

We performed dynamic renal scintigraphy with technetium-99m (Tc-99m) labeled mercapto-acetyl triglycine (MAG-3) and static renal scintigraphy with Tc-99m labeled dimercaptosuccinic acid (DMSA). In dynamic renal scintigraphy, bilaterally normal concentration function was observed. While right kidney excretion function was normal, an incomplete excretion pattern was seen on the left side. Complete urinary flow obstruction occurred approximately at the 10th minute of the acquisition, which did not seem to respond to the i.v. furosemide application. However, when only the renal cortex was included in the region of interest, the obstructive pattern disappeared. In static renal scintigraphy, a large renal pelvic diverticulum localized antero-medially was clearly visualized in the left-anterior oblique projection, most probably due to accumulation of radiopharmaceutical inside it.

This case showed that a renal pelvic diverticulum should be thought of when an incomplete excretion pattern is seen on dynamic renal scintigraphy. Using only a cortical region of interest may also help to distinguish other types of obstructive pattern from diverticulum. Additionally, Tc-99m DMSA scintigraphy may show diverticulum localization with antero-oblique projections in addition to routine projections.

Key words: renal, pelvic, diverticulum, scintigraphy, MAG-3, DMSA