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Evaluation of exercise-induced acute renal failure in renal hypouricemia using Tc-99m DTPA renography

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We present a case of a thirty-eight-year-old man who had exercise-induced acute renal failure (exercise-induced ARF). He experienced oliguria, general fatigue, and vague discomfort in the lower abdomen after he exercised. As he had suffered from hypouricemia before, he was diagnosed as having exercise-induced ARF associated with hypouricemia. Enhanced computed tomography (CT) images showed patchy wedge-shaped contrast enhancement on his bilateral kidneys, consistent with characteristic observations for exercise-induced ARF. Tc-99m diethylene triamine pentaacetic acid (DPTA) renography revealed decreases in both the renal blood flow (RBF) and glomerular filtration rate (GFR), and revealed parenchymal dysfunction of the bilateral kidneys. Renogram revealed a hypofunctional pattern on the bilateral kidneys. CT images and Tc-99m DTPA renography also had improved when the symptoms of exercised-induced ARF indicated improvement. It has been hypothesized that one cause of exercise-induced ARF may be renal vasocontraction. Although CT images are useful in evaluating exercise-induced ARF, Tc-99m DTPA renography can more easily and safely evaluate renal function. We also show that Tc-99m DTPA renography is useful in precisely evaluating the degree of improvement of exercise-induced ARF.

Key words: Tc-99m diethylene triamine pentaacetic acid (Tc-99m DTPA), hypouricemia, exercised induced acute renal failure, patchy wedged contrast enhancement, vasocontraction