

中文題目：Warfarin 導致之急性腎衰竭

英文題目：Warfarin-related nephropathy

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Case report

A 48-year-old man visited our hospital for decreased urine output. He had history of rheumatic heart disease with severe aortic and mitral regurgitation status post valve replacements seven months ago with serum creatinine (Cr) of 1.04 mg/dL. Warfarin was given from then and increased dose in recent one month due to inadequate therapeutic prothrombin time international normalization ratio (PT/INR).

At admission, physical examination was unremarkable except bilateral flank knocking pain. Biochemistry revealed Cr of 7.79 mg/dL, and blood urea nitrogen of 62 mg/dL. Urine microscopic examination showed some dysmorphic RBC and RBC cast. His PT/INR was 2.35 at admission and 2.86 two days later.

Autoimmune and infectious profiles were all normal. Abdominal computerized tomography (CT) showed left renal and upper ureter stone with minimal hydronephrosis (Figure 1A), while abdominal magnetic resonance imaging (MRI) showed no cortical necrosis or renal vascular stenosis (Figure 1B). Tc99m-DTPA renogram showed total glomerular filtration rate (GFR) of 97.22 mL/min (55.36 mL/min in the left kidney and 41.85 mL/min in the right kidney), and prolonged excretory time in the bilateral kidneys (Figure 2A, 2B).

After admission, forced diuresis was given with discontinued warfarin use. His renal function recovered dramatically on Day 5 and he was discharged on Day 12 with Cr of 2.93 mg/dL (Figure 3).

Discussion

Brodsky et. al. first described Warfarin related nephropathy (WRN) while acute kidney injury (AKI) in 9 warfarin overdosed patients¹, and further defined this entity as Cr increased greater than 0.3 mg/dL within one week of the PT/INR > 3.0². Our patient developed AKI with relative low PT/INR (less than 3), indicating the heterogeneity in the development of WRN. Kidney biopsy was not performed during AKI phase in this patient due to increased risk of hemorrhage and post renal obstruction suggested by the Tc99m-DTPA renogram which the glomerular perfusion and filtration functions were relatively intact and compatible with “microscopic post renal obstruction” caused by RBC cast in the renal tubules.

In summary, we described a case of WRN, that 1) developed acute kidney injury at relative low PT/INR, 2) had rapid resolution of AKI by discontinuing warfarin and forced diuretics, and 3) use Tc99m-DTPA renogram as a diagnostic tool in the acute phase of WRN to prevent invasive kidney biopsy.

1 Brodsky SV, Satoskar A, Chen J, Nadasdy G, Eagen JW, Hamirani M, *et al.* Acute kidney injury during warfarin therapy associated with obstructive tubular red blood cell casts: a report of 9 cases. *American journal of kidney diseases : the official journal of the National Kidney Foundation.* 2009; **54**: 1121-6.

2 Brodsky SV, Nadasdy T, Rovin BH, Satoskar AA, Nadasdy GM, Wu HM, *et al.* Warfarin-related

nephropathy occurs in patients with and without chronic kidney disease and is associated with an increased mortality rate. *Kidney Int.* 2011; **80**: 181-9.