

## Renal Artery Thrombosis Secondary to Blunt Abdominal Trauma with Accessory Renal Artery Supplying the Kidney Segment: A Rare Case Report

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### INTRODUCTION

Traumatic renal artery thrombosis (RAT) is an uncommon disease especially secondary to blunt trauma. There are some reports about RAT but reports of RAT involving accessory renal arteries are rare. Therapy of RAT is often surgical management such as nephrectomy, arterial revascularization or conservative management.<sup>(1,2)</sup> We report a 15-year-old girl with RAT and accessory renal artery supplying the kidney segment.

### CASE REPORT

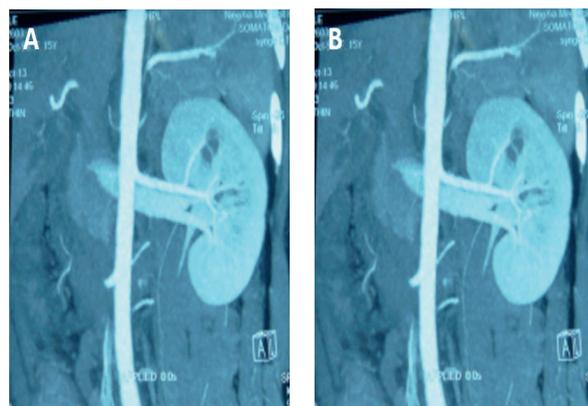
A 15-year-old female who was struck by a motor vehicle had been admitted to our hospital 5 hours after the injury. On physical examination the patient had no remarkable wounds and her blood pressure was stable (110/70 mmHg). Her laboratory data revealed; hematocrit 33.80%, serum creatinine 4.10 mmol/L, urea 4.10 mmol/L, aspartate aminotransferase 50.2 U/L, alanine transaminase 67.0 U/L, creatine kinase 548.9 U/L, lactate dehydrogenase 3253 U/L and amylase 158.7 U/L. Emergency management included intravenous administration of blood and crystalloids. A contrast-enhanced computer tomography (CE-CT) scan revealed very faint perfusion of the right kidney and an enhancement in a small portion of the upper pole of the right kidney (**Figure 1**). We performed CT angiography (CTA) in which there was no dye excretion in the right kidney and an accessory renal artery supplied segmental kidney was seen (**Figure 2A**). Another CTA (**Figure 2B**) showed normal left kidney. As the diagnosis of RAT was made, the patient underwent close conservative therapy to preserve her right renal function, considering her age and accessory renal artery blood supply. At post treatment month-1, -2 and -5 her blood pressure was 120/85 mmHg, 110/75 mmHg and 118/78 mmHg, respectively.

### DISCUSSION

Renal vascular injury following blunt abdominal trauma is rare. In a review of 945,326 patients from the American National Trauma Data Bank with blunt trauma, only 517 patients (0.05%) had injuries to the renal artery.<sup>(1)</sup> The RAT case with accessory renal artery blood supply is much more infrequent. Because of the symptom of RAT are difficult to elicit, most of urologic surgeons in our country often ignored the entity and couldn't make early



**Figure 1.** Contrast-enhanced computed tomography demonstrated remarkably reduced perfusion in right kidney and the enhancement of a little portion in the upper pole of the right kidney.



**Figure 2.** (A) Computed tomography angiography showed right main renal artery occlusion and accessory renal artery supplying a small portion of the upper pole of the right kidney; (B) computed tomography angiography showed proximal end of right main renal artery and normal left kidney.

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diagnosis. The syndrome and laboratory data of RAT are not specific.<sup>(2)</sup> The diagnosis mainly depend on changes on CT, angiography, dimercaptosuccinic acid scan and intravenous urography, however, which is more efficient for stablishing RAT diagnosis are not know and have not been compared so far.<sup>(2)</sup> The proposed mechanisms of RAT are: 1) sudden deceleration or crash injury results in vascular subintimal tears and then thrombosis and 2) renal artery is compressed by the power between the anterior abdominal wall and the vertebral bodies.<sup>(2-4)</sup> It is usually unilateral and left side is involved more frequently, possibly because of its shorter length. Maximum angulation and traction occur within 1 to 2 cm of the point where the renal artery is fixed to the aorta.<sup>(5)</sup> Another mechanism which may cause this type of injury is that the left kidney is more mobile than the right.<sup>(4,6)</sup> Our patient's injuries were caused by means of compression and sudden deceleration. In case of RAT, the treatment for this disease are revascularization and conservative observation.<sup>(2,7)</sup> However open surgical operation for treatment of RAT is seldom performed, because its lower success rate.<sup>(1,2)</sup> More and more trauma surgeons prefer to use minimally invasive surgical revascularization whenever possible for prompt revascularization in order to preserve renal function.<sup>(2-4)</sup> For the patients who encountered uncontrolled renovascular hypertension, nephrectomy should be considered.<sup>(1,2,8)</sup> RAT involving accessory renal arteries is rare condition, and we don't know the most appropriate treatment because of its rarity. However, like as this case report, close conservative therapy seems an advisable choice.

## CONFLICTS OF INTEREST

None declare.

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