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Bilateral acute renal infarction treated by endovascular therapy: A case report and literature review

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ABSTRACT

Renal infarction is a rare emergency and the estimated incidence is extremely low according to the literature. In addition, simultaneous bilateral renal infarction was only about 20% in these rare cases. Herein we reported a case of acute renal failure related to bilateral renal infarction and successfully treated by endovascular therapy including angioplasty and catheter-directed thrombolysis. His renal function also significantly improved after the intervention. This rare case reminds physician that early endovascular therapy might improve renal function and result in better renal outcome for patients with simultaneous bilateral renal infarction.

Keywords: bilateral renal infarction; anticoagulation; endovascular therapy

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Introduction

Renal infarction is a rare emergency and the estimated incidence was 0.004% among the census of emergency department in Taiwan [1]. In these rare cases, simultaneous bilateral infarction was only about 20%. In recent years, endovascular therapy has become a novel and

practical treatment strategy for peripheral intervention. Although some case reports have reported about endovascular therapy for renal infarction, simultaneous intervention for bilateral renal arteries was rarely reported. Herein we reported a case of acute renal failure (ARF) with bilateral renal artery thrombosis successfully treated by endovascular therapy.



Figure 1: Abdominal computed tomography showed bilateral renal infarction (Figure 1A & 1B).

Case Report

A 51-year-old male suffered from abdominal pain and was sent to our emergency department (ED) for help. Tracing back his history, he had hypertension and dyslipidemia for 10 years with regular medical control. In addition, he also had smoking history for a long time. On arrival at our ED, Laboratory data showed acute renal failure (Creatinine from 2.37 to 5.75 in two days). Lactic acidosis and increased D-Dimer were also noted. Electrocardiogram revealed atrial flutter. Because of significant abdominal pain, abdominal computed tomography was arranged and the results showed bilateral renal infarction (Figure 1A & 1B). After informing the family about

the possible risk of hemodialysis, we arranged renal artery angiography (Figure 2A & 2B) and performed simultaneous bilateral renal artery intervention by angioplasty and thrombus aspiration. Because renal blood flow was still not so good after above treatment, catheter-directed thrombolysis (CDT) was then performed. After several days of CDT, bilateral renal artery flow showed great improvement after serial intervention (Figure 2C & 2D). Then the patient was transferred to the ordinary ward for further care. Because atrial fibrillation and atrial flutter were noted during hospitalization, we changed previous intravenous heparinization to non-vitamin K antagonist oral anticoagulant

(apixaban) use for further prevention of and further outpatient visit showed creatinine thromboembolic event. Patient was later recovered to 2.03. discharged under oral anticoagulation treatment

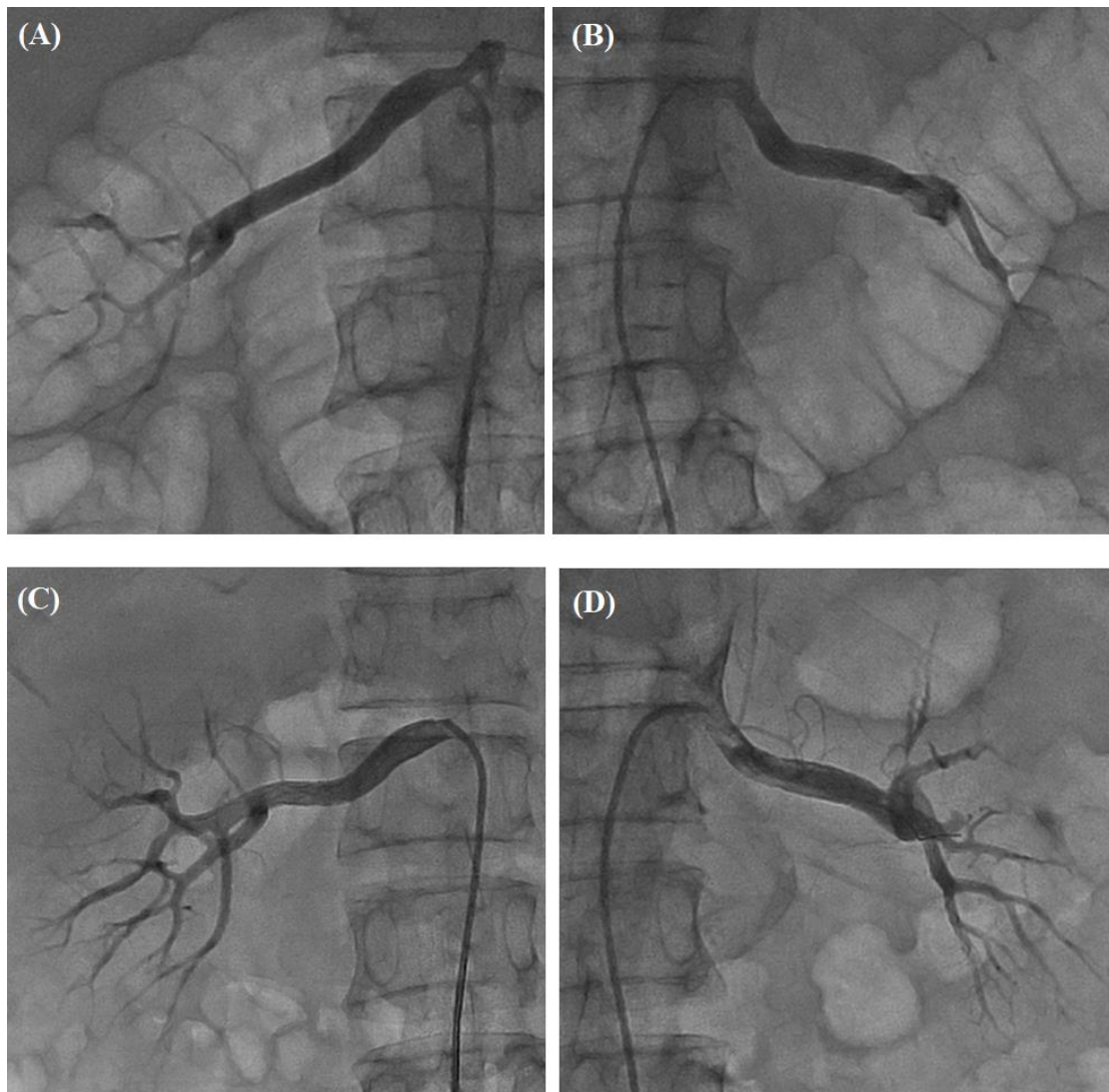


Figure 2: Bilateral renal angiography showed thrombosis (Figure 2A & 2B). Bilateral renal angiography post endovascular therapy showed great improvement of blood flow (Figure 2C & 2D).

Discussion

The clinical presentation of acute renal infarction is vague and variable. Patients with renal infarction often complain of flank or abdominal pain, with associated symptom/sign of nausea, vomiting, and fever. These findings may be accompanied by an acute elevation in blood pressure that is presumably mediated by

increased renin release. Sometimes hematuria can also be noted [2]. Acute renal infarction is a rare condition although the incidence is variable in the different studies [1,3]. Huang CC et al. reported that the estimated incidence was only 0.004% (20 of 481540) among the emergency department census in Taiwan [1]. In another series of almost 250,000 patients seen at an

emergency department over four years, only 17 cases (0.007%) were diagnosed [3]. Most cases of acute renal infarction were related to cardio-embolism like our case [4]. Atrial fibrillation was found to be the frequent cause of cardio-embolism under the situation. The optimal treatment was still uncertain due to absence of comparative studies [4]. Because renal prognosis has generally been favorable, anticoagulation with intravenous heparin is the standard treatment for most cases. Among the patients with unilateral obstruction of renal artery, even complete obstruction may not result in a significant increase in the serum creatinine, if the contralateral kidney is normal. However, for patients with bilateral renal infarction or a large and unilateral embolus over main renal artery which may cause deterioration of renal function [5], endovascular therapy might be necessary to reperfuse the renal circulation and preserve the renal function. According to the literature, there are several case reports and series reporting the endovascular therapy for one-side renal infarction. However, simultaneous intervention for bilateral renal arteries was rarely reported due to limited cases [6-7]. Although endovascular therapy was technically successful in most patients, the range and duration of infarction are major factors closely related to subsequent renal function. Islam MA et al. reported a case of bilateral renal infarction with ARF progression to hemodialysis. After bilateral endovascular therapy, patient did not require hemodialysis anymore and had partial recovery of renal function [6]. Goueffic Y et al. showed a case of ARF due to bilateral renal artery paradoxical

embolism successfully treated by endovascular therapy and this case also stopped hemodialysis after partial recovery of renal function [7]. These findings were similar to our case.

Conclusion

Although acute renal infarction is a rare medical emergency and most cases can be treated by anticoagulation therapy. For patients with simultaneous bilateral renal infarction, early endovascular therapy might improve renal function and result in better renal outcome. However, we still need further large sample study for confirmation.

Disclosures

None

Conflict of interest

None

Reference

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