Stenting for bilateral renal artery occlusion: a report of two cases

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Introduction

We report on two patients with bilateral renal artery occlusion in whom successful stent implantation in one of the occluded vessels resulted in improvement of renal function and hypertension. Chronic bilateral renal artery occlusion is rare, and the overall success of revascularization therapy depends on the functionality of collateral circulation to maintain renal viability [1].

Case 1

The patient was a 47-year-old, severely hypertensive woman. She had had high-dose abdominal radiotherapy 5 years earlier due to non-Hodgkin lymphoma, and her creatinine level 1 month before hospitalization was 2.2 mg/dl. She was brought to the emergency department (ED) because of headache, fatigue and decreased urinary output. Laboratory test results were: blood urea nitrogen (BUN) 72 mg/dl; creatinine 5.2 mg/dl; potassium 6.4 mEq/l; sodium 113 mEq/l; chloride 91 mEq/l. Doppler ultrasonography raised the possibility of bilateral renal artery stenosis. Her urinary output was 300 ml/day; medical therapy failed to improve it, and her serum creatinine level increased steadily to 6.1 mg/dl.

Abdominal angiography showed bilateral renal artery occlusion at the ostial level (Figure 1). She had a percutaneous transluminal angioplasty and stent implantation in the proximal right renal artery (Figure 2). Although the same procedure was planned for the left renal artery, its total obstruction could not be passed with the standard guide wire.

Fig. 1. Aortography showing bilateral renal artery occlusion in case 1.

The patient was polyuric and her blood pressure was controlled only by 10 mg of amlodipine a day after the procedure. Two weeks later, her daily urinary output was 2000 ml, and and her creatinine dropped down to 1.5 mg/dl.

Fig. 2. Right renal artery after angioplasty and stenting in case 1.
Case 2

The patient, a 49-year-old man with type II diabetes mellitus, hypertension and coronary atherosclerosis, was brought to the ED with complaints of fatigue and shortness of breath. Laboratory tests revealed a blood creatinine of 4.1 mg/dl and BUN of 69 mg/dl. Magnetic resonance angiography of his abdomen suggested stenosis of the right renal artery. Abdominal angiography revealed bilateral renal artery occlusions at the ostial level. A percutaneous transluminal angioplasty of the right renal artery was performed and a stent implanted in the same session (Figure 3). At the end of the first week, this patient’s blood pressure was within normal limits, and his blood creatinine and BUN decreased to 1.6 and 29 mg/dl, respectively.

Discussion

To our knowledge, there are no data concerning chronic (progressive) bilateral renal artery occlusions due to atherosclerosis or following abdominal radiotherapy that were treated with endovascular stent placement [2–4]. The ability of revascularization to restore or improve the function of the treated kidney has not been demonstrated definitively. In our first case, high doses of radiation could quite probably have caused bilateral renal artery occlusions, while diffuse atherosclerosis was the most probable cause in the second case. We are unable to define precisely the time frame over which bilateral occlusions developed in either of the patients. Their renal functions returned to normal; significant improvement of the severe hypertension was achieved in the first case, while complete control was achieved in the second case.

To our knowledge, these are the first two patients with chronic bilateral renal artery occlusions with two different pathogeneses who were treated with stent implantation of one of the occluded renal arteries.

Conflict of interest statement. None declared.

References


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