

Letter to the Editor

Iatrogenic renal artery stenosis after renal sympathetic denervation



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ARTICLE INFO

Article history:

Received 22 November 2013

Accepted 30 December 2013

Available online 10 January 2014

Keywords:

Resistant hypertension

Renal sympathetic denervation

Renal artery stenosis

To the Editor

A 42-year-old female patient was referred for help with managing difficult-to-control hypertension. She had been diagnosed with hypertension at age 27, and it was well controlled until about one year ago. Various combinations of different antihypertensive drugs had been tried, and a search for a cause of secondary hypertension revealed no clues. Then, she underwent a renal sympathetic denervation (RSD) procedure six months ago. Both renal arteries were patent at baseline angiography without any significant stenosis (Fig. 1). Five ablations were performed in each renal artery with the use of a radiofrequency catheter (Symplicity renal denervation system, Medtronic Inc., Mountain View, California, USA). The procedure took about one hour and there were no procedural complications. Her blood pressure (BP) was under control after the procedure. Laboratory measures were also in normal ranges. She had been taking amlodipin 10 mg, valsartan 320 mg, hydrochlorothiazide 25 mg, carvedilol 25 mg, and spiranolactone 50 mg daily at discharge.

One week ago, she was admitted to a local outpatient clinic with the complaints of headache, fatigue, and dizziness. Her BP measured 210/120 mm Hg from both arms, and her average pulse was 78 beats per minute. Laboratory testing found that the patient had normal serum electrolyte levels and impaired renal function (serum creatinine 1.8 mmol/dL). Renal arterial Doppler ultrasonography revealed significant stenosis on the left renal artery. The patient underwent conventional renal angiography which verified renal artery stenosis

(Fig. 2). After predilatation, stenosis was treated with the use of a 5.0 × 15 mm stent (RX Herculink Elite renal stent system, Abbott Laboratories, Abbott Park, Illinois, USA). Serum creatinine levels were decreased (creatinine 1.3 mmol/L) and blood pressure fell to near normal values after renal arterial stenting.

Denervation of renal sympathetic nerves with radiofrequency ablation catheter is a new non-drug, therapeutic approach in the treatment of resistant hypertension [1]. Recent guidelines for the management of arterial hypertension addressed RSD as a Class IIb recommendation for the patients with truly resistant hypertension (clinic BP ≥ 160/110 mm Hg confirmed by ambulatory BP monitoring) [1]. The procedure is contraindicated in patients with renal arterial calcification, atheromatous plaques, and stenosis [2]. Radiofrequency energy released during the ablation could cause local endothelial injury, oedema, and spasm at the renal artery [3]. Templin et al. assessed renal arteries with optical coherence tomography after RSD and observed vasospasm (42%) and vessel wall oedema (96%) [4]. Also, activation of coagulation pathway and intraluminal thrombus formation at the treatment sites were reported [4]. Antiplatelet therapy (acetyl salicylic acid 75–100 mg daily, for up to one month) after RSD is reasonable. Current European Society of Cardiology consensus on catheter-based renal denervation recommended serial renal artery imaging (duplex ultrasound, MRI/CT with contrast angiogram) during follow-up beginning 6 months after the procedure and annually thereafter [2].

Up to date, development of renal arterial stenosis (RAS) or progression of previous plaques to clinically significant lesions was reported

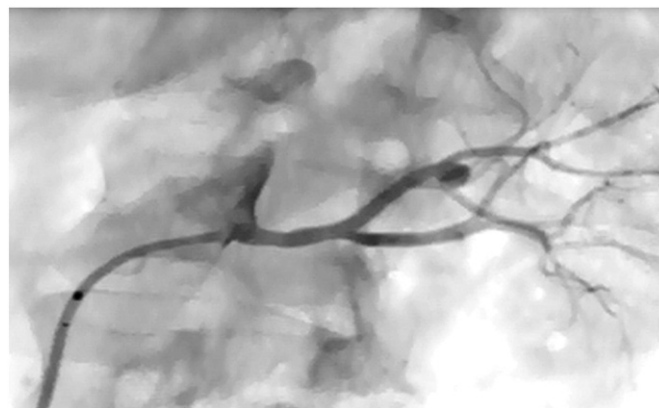


Fig. 1. The left renal artery at baseline.

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Fig. 2. The left renal artery 6 months after renal sympathetic denervation.

only in a few cases [5–8]. Formation of de novo RAS after the procedure was detected in two cases which presented with recurrent arterial hypertension [3,8]. Our case is the third one which required percutaneous stenting. Although the incidence of RAS is uncommon after RSD, clinicians caring for the patients that underwent RDS should keep in mind RAS as a cause of recurrent hypertension and deterioration of renal functions. A high index of suspicion is needed and a simple

Doppler ultrasound study of the renal artery as a part of the suggested screening during follow-up should be ordered particularly.

Acknowledgements

This article was published with the written consent of the patient. No external funding and no competing interests were declared.

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