Serial imaging observations of vascular healing in a denervation-induced renal artery dissection

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A 75-year-old woman underwent bilateral renal denervation with an ultrasound-based balloon denervation system (Paradise™; Recor Medical, Palo Alto, CA, USA) due to resistant hypertension. The procedure was successfully completed without clinical adverse events; however, the post-procedural right renal artery angiogram showed non-flow limiting lumen irregularities, associated with micro-thrombi and dissections with intramural hematoma formation by optical coherence tomography (OCT). No further treatment was performed and the patient was discharged on aspirin for 1 month. Six-month follow-up magnetic resonance angiography (MRA) showed no signs of stenosis. At 1 year, severe refractory hypertension persisted (mean office 193/93 mmHg) and the patient suffered a cerebrovascular accident. In view of the persistent elevated blood pressure, a repeat procedure was performed 19 months after the baseline procedure. Prior to the repeat procedure, OCT was performed in the right renal artery demonstrating no evidence of vascular trauma with complete healing of the dissections and resolution of the hematoma.

Although small dissections and micro-thrombi have been reported as direct vascular consequences of renal denervation with several different devices, their clinical significance remains unclear. We present for the first time the follow-up of a denervation-induced dissection showing a completed healing process with no evidence of persistent vascular trauma or development of stenosis.

Angiographic and optical coherence tomography (OCT) images from the right renal artery from pre-denervation, post-denervation, and at the repeat procedure. Follow-up angiography demonstrates the resolution of lumen irregularities, while OCT images disclose the complete healing of dissections and intramural hematoma. White arrow, dissection; yellow arrow, thrombus; cross, hematoma.

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