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It may be not suitable to perform renal denervation in renal arteries with significant stenosis

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Short title: Renal denervation in renal arteries with stenosis

To the Editor

I have read with great interest a case report authored by Dr Giordano and colleagues published in this journal recently [1]. This report documented, for the first time, that renal denervation was successfully performed in a renal artery with a significant stenosis at the proximal tract [1]. The researchers crossed the lesion with the ablation catheter and then performed 6 ablation runs distally to the stenotic lesion. The pre-existing renal artery stenosis was stable within 6 months after the procedure. This case report may be important because renal artery stenosis is common in hypertensive patients. For example, a study reported that 7% of hypertensive patients have angiographically significant renal artery stenosis (lumen narrowing $\geq 50\%$) [2].

However, it is still a concern to perform renal denervation in the renal artery with significant stenosis for the following reasons. (1) It has been reported that renal artery stenosis can occur after the procedure in up to 4.3% of hypertensive patients who did not have this complication before the procedure [3]. Therefore, caution should be taken when performing renal denervation in patients complicated with renal artery stenosis. (2) Atherosclerosis accounts for approximately 90% of the cases of renal artery stenosis in clinics [4]. Although renal denervation in this case report was uneventful, it is possible that the renal denervation catheter may cause renal atherosclerotic rupture, which may lead to cholesterol embolization and consequently renal failure [5]. (3) The authors mentioned that “in the worst case scenario that a complication occurs during the procedure, stenting can be easily performed”. However, stenting is not always a safe approach. For example, it has been reported that stenting of the renal artery can lead to stent thrombosis and sometimes death [6]. (4) The effect of renal denervation on lowering blood pressure is controversial. Although a large number of clinical studies showed that renal denervation decreased blood pressure, Medtronic released the

results of the Symplicity HTN-3 trial on 9 January 2014 which showed that renal denervation did not lower blood pressure compared with the sham control at 6 months.

Therefore, it is better to follow the patient selection criteria used in the Symplicity HTN-1 and HTN-2 trials [7, 8] to avoid performing renal denervation in renal arteries with significant stenosis both in clinical practice and in clinical trials investigating the effect of renal denervation on hypertension or non-hypertension indications, *e.g.* diabetes [9].

Conflict of interest

The authors declare that they have no conflict of interest.

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