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Letters

TO THE EDITOR

Chemical Renal Denervation Revisited

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We read with great interest the report by Fischell et al. (1), presenting the first-in-human experience with transcatheter alcohol-mediated perivascular renal denervation using the Peregrine system. This study proved the safety and feasibility of chemical renal sympathetic denervation using microdoses of alcohol infused via microneedles into the perivascular space of the renal artery.

Despite the discouraging early results of the sham-controlled SYMPLICITY HTN-3 trial, renal denervation still offers great interest, as it deals with patients who have no other option for the treatment of resistant hypertension. Chemical renal artery denervation was first introduced (2) by our group with vincristine, a vinca alkaloid antineoplastic drug that inhibits deoxyribonucleic acid and ribonucleic acid synthesis and its potent neurotoxicity by causing giant axonal swellings and secondary demyelination, which has been used both in an experimental model (3) and in humans with resistant hypertension (4,5). In an experimental model, its local delivery by a dedicated catheter showed favorable outcomes regarding a decrease in the number of renal sympathetic nerves, leading to the assumption that this method can be used effectively to treat resistant hypertension (3,4). This was proved in the first-in-human application of chemical denervation by vincristine, which was safe and resulted in a significant decrease in systolic blood pressure in a patient with resistant hypertension (5).

The recently published data on the use of alcohol denervation are encouraging and may increase interest in chemical denervation as an alternative to radiofrequency renal denervation in specific populations.

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REPLY: Chemical Renal Denervation Revisited

It is our pleasure to respond to the letter published by Dr. Toutouzas and colleagues in reference to our paper describing the first-in-human experience with the Peregrine System for chemical renal denervation (RDN) (1). We appreciate their enthusiasm for the concept and acknowledge their contributions in this space using the local delivery of vincristine to perform chemical RDN (2).

As pointed out in their letter, the failure of the sham-controlled SYMPLICITY HTN-3 trial (3) left many observers with a bias that RDN has failed. We agree with Toutouzas and colleagues, and others, that there is still promise for RDN but that the flaws in the SYMPLICITY HTN-3 trial made it challenging to demonstrate a therapeutic effect. Factors that may have contributed to the failure of that trial include: 1) a lack of operator experience, with no run-in procedures to allow the physicians to learn how to use the device properly; 2) a lack of adequate denervation due to challenges in