Letter to the Editor

Renal Denervation with Vincristine for the Treatment of Resistant Hypertension: Further Investigations Are Needed to Implement It Globally

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We have read with great interest the article entitled "Chemical denervation of the renal artery with vincristine for the treatment of resistant arterial hypertension: first-in-man application", by Stefanadis et al, published in the Hellenic Journal of Cardiology.[1] Catheter-based renal denervation represents a promising choice for treating hypertensive patients. Positive outcomes were observed in the two major studies published on this topic (Symplicity HTN-1, Symplicity HTN-2), accompanied by a low incidence of side effects.[2,3]

The abovementioned investigation by Stefanadis et al reported the use of vincristine (an antineoplastic drug with potential for peripheral neurotoxicity) in a 74-year-old male patient with resistant hypertension, which constitutes a novel alternative to catheter-based renal denervation by radiofrequency current. This was the first application of this procedure in a human. At the 4-week follow up, the office blood pressure was 132/80 mmHg, compared with 174/104 mmHg before the treatment. The ambulatory blood pressure measurements showed an average of 123/72 mmHg, whereas at the beginning of the treatment it was 146/85 mmHg.

In another investigation published recently, the same author demonstrated the efficacy and safety of this technique in reducing the number of renal nerves. This was carried out in 14 juvenile Landrace swine, which received a local delivery of vincristine by a specially designed catheter, and the results were compared with placebo-treated animals. At the end, the authors concluded that this procedure is feasible and results in a significant reduction in the number of renal nerves, with the known consequences in terms of blood pressure reduction.[4]

The use of vincristine has not been the unique choice to reduce the number of renal nerves and abolish their influence on blood pressure levels. Streitparth et al designed a study to evaluate the administration of periarterial ethanol injection in 6 pigs, with the contralateral kidney serving as control. The outcomes showed a neural degeneration in pigs treated with 10 mL ethanol. In addition, they found a significant reduction of 53% ($p<0.02$) in norepinephrine concentration in the kidney parenchyma, compared with the untreated contralateral kidney.[5]

These research investigations represent another way of developing renal denerva-

tion in order to achieve blood pressure control in patients with hypertension. However, the use of vincristine and other chemical techniques needs further investigation in humans and with a larger number of patients. In this case report, the procedure achieved a reduction in both office and ambulatory blood pressure, without side effects. Follow up over a long period of time is necessary in order to know the real efficacy of this technique. That is important, because these promising results should be accompanied by a reduction in cardiovascular, kidney, and cerebrovascular risk. Moreover, so far it is unknown whether the absence of side effects with the use of vincristine is permanent beyond 4 weeks. We consider that this first intervention in humans using this chemical technique should stimulate other researchers to clarify the abovementioned aspects, as well as others, such as the cost-effectiveness and viability in a large number of individuals.

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