



Patient preference: messages for the wider adoption of renal denervation in the real world

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Hypertension is the most important attributable cause of cardiovascular diseases worldwide [1–3]. Although there are many effective and well-tolerated antihypertensive medications, the control rates among hypertensive patients remain disappointing, below 25% globally [1, 3]. Among the various causes of suboptimal control, non-adherence to medications is the most essential one [4]. Non-adherence influences not only hypertension control, but also the management of all non-communicable chronic diseases [5]. Non-adherence is the inherent limitation of medications, which should be taken regularly to action. Non-adherence is not entirely due to forgetfulness, but also, at least in part, implies patient preference. In contrast to medication control, device therapy of hypertension, like renal denervation, confers sustained blood pressure control and is free of the concern of non-adherence [6]. However, the invasive nature and varied blood pressure-lowering responses are disadvantages of device therapy and may impact patient preference [7]. Patient preference has been emphasized to be considered during hypertension treatment strategy determination through shared decision making in almost all recently published consensus documents or position papers on renal denervation [7–10]. Patient preference is built on the received medical information and his or her perceptions about the information. Therefore, valid, unbiased, and updated medical information disclosure is of utmost importance during shared decision-making process, instead of emphasizing patient preference alone, which could be easily misguided [11]. Choosing Wisely UK advocates use of the BRAN (benefits, risks, alternatives, nothing) tool to establish patient preference on a scientifically sound

basis [12]. Within the framework of BRAN, short-term and long-term effects, as well as economic considerations, of strategies consulted should be provided in share-decision making.

Prior studies regarding patient preference for renal denervation and pharmacological therapy for hypertension are limited. One was based on 1011 patients in Germany [13], the other was based on 2768 patients in Western Europe and the United States [14]. In this issue of the Journal, Kario et al reported patient preference for renal denervation according to nationwide web-based survey in 2392 patients in Japan [15]. All these studies were done without pre-survey education of updated medical information of renal denervation, thus, not a qualified setting for shared decision making for consultation for renal denervation. However, the responses from participants reflected what renal denervation was perceived by the public. Results from the three survey-type investigations are surprisingly similar. First, among patients undertaking the survey, 30–50% would prefer renal denervation as the treatment strategy for hypertension. Second, patients who were pro-renal denervation were younger, more often male, and less adherent to medications and had more antihypertensive drug-related side effects. The number of antihypertensive medications did not impact the willingness to undergo renal denervation. Patients with higher on-treatment blood pressures were more prone to renal denervation in Japan [15], whereas this trend was not evident in patients surveyed in Western Europe and the United States [14]. Third, instead of the relatively positive attitudes towards renal denervation, the expectations for renal denervation on blood pressure-lowering from patients were high. Among patients surveyed in Japan and Germany, 40% expected renal denervation could achieve systolic blood pressure reduction of at least 15 mmHg, whereas few than 10% of patients accepted a systolic blood pressure reduction of less than 10 mmHg with renal denervation. Further, only 4% of Germany patients agreed to undergo renal denervation if the probability of blood pressure reduction of ≥ 10 mmHg is $< 80\%$ [13].

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The consistent findings from the three surveys could partly explain the slow uptake of renal denervation worldwide: there is still a gap between the expected blood pressure reductions and what was observed in randomized clinical trials [6]. However, the blood pressure reductions achieved in real-world registries [16], particularly in Asian populations [17–19], were similar to what was expected in the surveys. In addition to office blood pressure reductions, renal denervation could confer greater reductions in asleep pressures, blood pressure fluctuations, and ambulatory blood pressure reductions, all of which are of potential prognostic significance [8]. A recent study showed that, among 296 patients treated with renal denervation, 180 patients with 24-h ambulatory systolic blood pressure reduction of ≥ 5 mmHg at 3 months had a 47% reduction in major adverse cardiovascular events, compared to those with < 5 mmHg reduction, during a median follow-up of 48 months [20]. All these updated information should be provided to patients consulted for renal denervation before assessing patient preference. On the other hand, the surveys pointed out that current knowledge gaps in renal denervation including clinical or intra-procedural predictors for responders or even super-responders need to be filled to lessen uncertainty about its potentially powerful blood pressure-lowering efficacy.

Compliance with ethical standards

Conflict of interest The author declares no competing interests.

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