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Original Article

Renal Sympathetic Denervation and Quality of Life

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ABSTRACT

Background: Renal sympathetic denervation (RSD) is a promising strategy in the treatment of resistant hypertension. No studies have assessed the effect of RSD on quality of life in our country, which was the aim of this study. **Methods:** The EuroQol5 Dimensions questionnaire (EQ5D5L) was chosen to evaluate quality of life in 10 patients undergoing RSD, and it was applied before and 3 months after the procedure. **Results:** Mean age was 47.3 ± 12 years and 90% of the patients were female. Baseline blood pressure was 187 ± 37.5/104 ± 18.5 mmHg and the number of antihypertensive drugs was 7.6 ± 1.3. Before the procedure, the value assigned to health status was 37.5 ± 22.7, increasing at 3 months to 70.5 ± 20.9 (P = 0.01). In the follow-up, in addition to a decrease in the number of antihypertensive drugs (7.6 ± 1.3 vs. 6 ± 2.2; P = 0.05), a trend towards reduced levels of systolic blood pressure (187 ± 36 mmHg vs 170 ± 44 mmHg; P = 0.10) and diastolic blood pressure (104 ± 18 mmHg vs 98 ± 20 mmHg; P = 0.20) was observed. Health status improvement resulted from a reduction of problems related to mobility, usual activities, pain/discomfort and anxiety/depression. The magnitude of blood pressure reduction was not associated with improved quality in all of the patients. On the other hand, those who had a decrease in the number of antihypertensive drugs reported a better health status. **Conclusions:** Patients with resistant hypertension have poor health status scores. RSD improved quality of life in most patients. Further studies are required to confirm consistent benefits.

DESCRIPTORS: Hypertension. Kidney. Sympathectomy. Quality of life.

RESUMO

Denervação Simpática Renal e Qualidade de Vida

Introdução: A denervação simpática renal (DSR) é estratégia promissora no tratamento da hipertensão arterial resistente. Nenhum estudo avaliou o efeito da DSR na qualidade de vida em nosso meio, objetivo deste estudo. **Métodos:** O questionário *EuroQol-5 Dimensions* (EQ5D5L) foi utilizado para avaliar a qualidade de vida de 10 pacientes submetidos a DSR, sendo aplicado antes e 3 meses após o procedimento. **Resultados:** A média de idade foi de 47,3 ± 12 anos e 90% dos pacientes eram do sexo feminino. A pressão arterial basal foi de 187 ± 37,5/104 ± 18,5 mmHg e o número de antihipertensivos utilizados foi de 7,6 ± 1,3. Antes do procedimento, o valor atribuído ao estado de saúde foi de 37,5 ± 22,7, aumentando aos 3 meses para 70,5 ± 20,9 (P = 0,01). No seguimento, além da diminuição do número de antihipertensivos (7,6 ± 1,3 vs. 6 ± 2,2; P = 0,05), foi observada tendência a queda dos níveis da pressão sistólica (187 ± 36 mmHg vs. 170 ± 44 mmHg; P = 0,10) e da pressão diastólica (104 ± 18 mmHg vs. 98 ± 20 mmHg; P = 0,20). A melhora do estado de saúde resultou da redução de problemas relacionados a mobilidade, atividades usuais, dor/desconforto e ansiedade/depressão. A magnitude da redução da pressão arterial não se associou à melhora da qualidade de vida em todos os pacientes. Por outro lado, aqueles que experimentaram redução do número de antihipertensivos relataram melhor estado de saúde. **Conclusões:** Hipertensos resistentes apresentam baixos escores de estado de saúde. A DSR apontou melhora da qualidade de vida na maioria dos pacientes. Estudos maiores são necessários para confirmar benefícios consistentes.

DESCRITORES: Hipertensão. Rins. Simpatectomia. Qualidade de vida.

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The prevalence of resistant hypertension ranges from 10% to 15%, depending on the population studied and the applied definitions. Higher figures are observed in conditions associated with sympathetic hyperactivity, such as obesity, obstructive sleep apnea, diabetes, and renal dysfunction. Chronic arterial hypertension is associated with a substantial risk of stroke, coronary artery disease, and vascular disorders. In patients aged 40 to 70 years, each increment of 20 mmHg in systolic blood pressure or of 10 mmHg in diastolic blood pressure doubles the risk of cardiovascular disease in the range of blood pressure values between 115/75 mmHg and 185/115 mmHg.[1] Studies indicate that hypertension is associated with worse quality of life.[2,3]

Recently, the Symplicity-HTN2 Trial study demonstrated significant reduction in blood pressure (BP) in drug-resistant hypertensive patients submitted to renal sympathetic denervation.[4] However, data regarding the safety, long-term effectiveness, reduction in the number of antihypertensive drugs, cost-effectiveness ratio, and effects on quality of life were not evaluated, especially in the Brazilian population. This study aimed to evaluate the effects of the experience with renal sympathetic denervation on the quality of life in patients with drug-resistant hypertension in a tertiary center.

METHODS

Population

The study included patients submitted to renal sympathetic denervation who met the inclusion criteria: age between 18 and 80 years; systolic blood pressure measured at the clinic > 160 mmHg despite treatment with at least three antihypertensive drugs; blood pressure controlled with at least four antihypertensive drugs; and favorable anatomy to renal sympathetic denervation determined by renal angiography. Exclusion criteria were: secondary hypertension; creatinine clearance < 45 mL/min; severe liver disease; New York Heart Association (NYHA) functional class III-IV heart failure or ejection fraction < 35%; renal artery anomalies, such as stenos is > 50%, presence of stent, or previous angioplasty; renal artery diameter < 4 mm, and/or length < 20 mm; pregnancy; life expectancy < 1 year; or inability to complete follow-up requirements. An informed consent was obtained in all cases, and the study was approved by the local ethics committee.

EuroQol-5 Dimensions Questionnaire

The EuroQol-5 Dimensions (EQ5D5L), a questionnaire developed by the EuroQol group, aims at assessing health status, in a simple and generic way, and thus helping in the clinical assessment and implementation of economic measures.[5] Applicable to a wide variety of health conditions, the EQ-5D-5L does not require a high cognitive level and can be performed in a few minutes.

The tool considers each domain independently and does not produce a total score of quality of life, considering the premise that quality of life is a multidimensional construct. It consists of two pages and includes two main components: a descriptive system that defines the health-related quality of life (HRQoL) in five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression), each with five levels of severity (1, no problems; 2, some problems; 3, moderate problems; 4, severe problems; and 5, extreme problems), and a visual analog scale (VAS), in which patients indicate how they feel on a scale of 0 to 100, where 0 represents the worst imaginable and 100 the best imaginable health, and the value is written in a box placed next to the scale (Figure 1). Patients are then classified with distinct five-digit health codes.[5] For instance, state 11111 indicates no problems in any dimensions, whereas state 55555 shows extreme problems in all dimensions, and state 12345 shows no problems in mobility, some problems in self-care, moderate problems related to usual activities, severe problems regarding pain/discomfort, and extreme problems regarding anxiety/depression.

Statistical Analysis

Continuous variables were described as mean and standard deviation, and categorical variables as absolute and relative frequencies. The comparison of continuous variables was performed by paired Student's t-test, considering the pre- and post-procedure values. P-values < 0.05 were considered statistically significant. STATA 11 SE software was used for statistical analysis and chart construction.

RESULTS

In total, ten patients (age 47.3 ± 12 years, 90% women) underwent renal sympathetic denervation at the Instituto Dante Pazzanese de Cardiologia (São Paulo, SP, Brazil) between July and November 2012. Basal BP was 187 ± 37.5/104 ± 18.5 mmHg, and the mean number of antihypertensive drugs was 7.6 ± 1.3 (ranging from five to nine). The mean time of hypertension diagnosis was 18.3 ± 10.6 years. All patients completed the questionnaire prior to the procedure and at three months of follow-up. The questionnaire was administered in-person by a specialist in hypertension. At three months, there was a tendency of BP reduction: systolic blood pressure pre vs. Post (187 ± 36 mmHg vs. 170 ± 44 mmHg; P = 0.10), and diastolic blood pressure pre vs. post (104 ± 18 mmHg vs. 98 ± 20 mmHg; P = 0.20); a significant decrease in the number of antihypertensive drugs pre vs. post (7.6 ± 1.3 drugs vs. 6 ± 2.2 drugs; P = 0.05) was also observed.