Response to Lifestyle Modification in Patients With Vasovagal Syncope and Hypertension Relative to the Patients With Vasovagal Syncope and Normal Blood Pressure

Zahra Emkanjoo,1 Ali Rezaie,2 Jalal Kheirkhah,3 and Ala Keikhavani4,

1Cardiac Electrophysiology Research Center, Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Tehran, IR Iran
2Department of Cardiology, Cardiac Electrophysiology Research Center, Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Tehran, IR Iran
3Cardiology Research Center, Heshmat Cardiovascular Medical and Research Center, Guilan University of Medical Sciences, Rasht, IR Iran
4Department of Cardiology, Rajaie General Hospital, Alborz University of Medical Sciences, Alborz, IR Iran

*Corresponding author: Ala Keikhavani, Department of Cardiology, Rajaie General Hospital, Alborz University of Medical Sciences, Alborz, IR Iran. E-mail: alakeikhavani@yahoo.com

Received 2016 March 31; Accepted 2016 May 14.

Abstract

Background: Neurally-mediated (vasovagal) syncope refers to a reflex response causing vasodilatation and/or bradycardia leading to systemic hypotension and cerebral hypoperfusion. Patients should be encouraged to liberalize their fluid and salt intake, unless they have contraindications such as poor control hypertension.

Objectives: In this study, we evaluated response to treatment (lifestyle modification) of patients with vasovagal syncope and hypertension relative to the patients with vasovagal syncope and normal blood pressure.

Methods: We reviewed the medical records of patients referred to the syncope clinic of Rajaie heart center in Tehran, Iran, between 2007 and 2010. We included patients with vasovagal syncope and excluded patients with other causes of syncope like cardiac, cerebrovascular accident and head trauma. Patients were followed 29.15 ± 10.43 months. Patients were treated with lifestyle modification, salt and water intake and 30 minute isotonic exercise 5 days a week.

Results: From a total of 235 studied patients, 161 cases (68.5%) were males. The mean age of the patients was 48.01 ± 19.66 years. Sixty-four patients (27.2%) were hypertensive. Response to treatment was defined as no syncope in the follow-up period. There was a significant difference in response to treatment between patients with vasovagal syncope and hypertension and patients with vasovagal syncope and normal blood pressure (P = 0.000). The mean syncope rate was higher in hypertensive patients before and after the treatment and hypertensive patients were older (P = 0.000).

Conclusions: Response to treatment was better in vasovagal patients with normal blood pressure compared to those who are hypertensive but hypertensive patients responded too.

Keywords: Vasovagal Syncope, Hypertension, Treatment

1. Background

Neurally-mediated (vasovagal) syncope refers to a transient loss of consciousness due to transient vasodilatation and/or bradycardia. Central autonomic reflex is the pathophysiologic basis of aforementioned hemodynamic changes, which causes hypotension, bradycardia, and cerebral hypoperfusion. Patients with vasovagal syncope may have other co-morbidities, such as hypertension and diabetes. Hypertension is a common medical problem in old patients (1). Some old patients with syncope may have chronic hypertension (2). Previous case reports in hypertensive patients demonstrated antihypertensive drug dosage as a cause of syncope in these patients. Lifestyle modification is the basis of treatment for vasovagal syncope (3). Patients should be encouraged to liberalize their fluid and salt intake. However, salt should be limited in patients with poor control hypertension.

2. Objectives

In this study, we evaluated response to lifestyle modification in patients with vasovagal syncope and hypertension relative to the patients with vasovagal syncope and normal blood pressure.

3. Methods

We reviewed the medical records of patients referred to the syncope clinic of Rajaie heart center in Tehran,
Iran, between 2007 and 2010. We included patients with mixed and vasodepressor types of vasovagal syncope and excluded patients with other causes of syncope like cardiac and orthostatic hypotension. Also, we excluded all patients with poor control hypertension, cerebrovascular accident, head trauma, increased blood pressure during follow-up, need to change antihypertensive drug dosage, and inability to give informed consent. Orthostatic hypotension was excluded by two separate measurement in morning setting. Patients were followed 29.15 ± 10.43 months. Patients were treated with salt and water intake for 12 months and lifestyle modification. Lifestyle modification was defined as thirty minutes isotonic physical activity 5 days a week, avoidance of prolonged standing, humid and hot environment. Patients were divided into two groups: the first group was patients with syncope and normal blood pressure, second group was patients with syncope and history of hypertension. Patients were followed three times a year. Patients with elevated blood pressure during the study were excluded during follow-up.

3.1. Statistical Analysis
The data were expressed as the mean ± SD for the interval variables and categorical variables were expressed as percentage. Comparisons between the study subgroups were performed via the chi-square or Fisher’s exact test and student’s t-test to compare the categorical and continuous variables. Moreover, a multivariable analysis via the logistic regression mode was performed to investigate the adjusted associations between certain important study variables and syncope. A P value < 0.05 was considered to be statistically significant. The statistical analyses were performed using SPSS 15.0 (SPSS Inc, Chicago, Illinois, and the United States).

4. Results
From a total of 235 studied patients, 161 cases (68.5%) were males. The mean age of the patients was 48.01 ± 19.66 years. Sixty-four patients (27.2%) were hypertensive. Patients’ demographic and clinical data are summarized in Table 1. The mean age of men and women were 46.65 ± 20.27 and 50.98 ± 18.16, respectively. There was no significant difference between male and female patients regarding the syncope episodes. Response to treatment was defined as no syncope in the follow-up period. The mean number of syncope episodes in the normal blood pressure and high blood pressure groups were decreased significantly at the end of the study (Figures 1 and 2). There was a significant difference in response to treatment between patients with vasovagal syncope and hypertension and patients with vasovagal syncope and normal blood pressure (Figure 3, P = 0.000). The mean syncope rate was higher in hypertensive patients before and after the treatment and hypertensive patients were older (P = 0.000, Figure 4), multivariate analysis demonstrated that age is an independent predictors of poor response and increased syncope number in hypertensive patients.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal Blood Pressure Group</th>
<th>Hypertensive Group</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>64.32 ± 9.5</td>
<td>41.91 ± 19</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender (M/F)</td>
<td>116/55</td>
<td>45/19</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Syncope episodes, N</td>
<td>2.21 ± 1.53</td>
<td>2.65 ± 1.31</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Response to treatment, %</td>
<td>73.70</td>
<td>32.80</td>
<td>0.000</td>
</tr>
<tr>
<td>LVEF, %</td>
<td>51 ± 9.9</td>
<td>5.4 ± 9.1</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>5</td>
<td>7</td>
<td>&gt; 0.05</td>
</tr>
</tbody>
</table>

Abbreviations: F, female; LVEF, left ventricular ejection fraction; M, male.

5. Discussion
Vasovagal syncope is a transient loss of consciousness due to loss of postural tone after hypoperfusion in cerebrum and/or brain stem. The cornerstone of treatment in vasovagal syncope is lifestyle modification. Increased salt and water ingestion and special physical maneuver can

Figure 1. Number of Syncope in Patients With Normal Blood Pressure Before and After Treatment

Figure 3. Number of Syncope Recurrence of Syncope After Medical Treatment (N/Year)
be used to decrease syncope episodes. Other treatment modalities, such as dual chamber pacemaker were less useful in these patients. Lifestyle modification with emphasis on water and salt ingestion was recommended to all patients. At least 10 to 12 glass of water and other liquids were recommended to all patients. We could not find previous investigation about long-term treatment of vasovagal syncope in patients with hypertension. Available studies in hypertensive vasovagal syncope have demonstrated that hypertensive patients have the same proportion of positive responses compared to the normotensive patients in either the passive phase or nitroglycerin-enhanced phase of the test (4). Other investigations have shown that hypertension can be a risk factor of cardiovascular mortality in vasovagal syncope (5-8). Hypertensive patients who suffer from vasovagal syncope represent a diverse group. The disorders of autonomic control associated with orthostatic intolerance can result in syncope and near-syncope. A basic understanding of the pathophysiology of syncope in this group is essential to diagnosis and proper treatment. Approaches to treatment are largely empirical and this is due to our lack of understanding of the underlying pathogenesis. The management of vasovagal syncope is often limited to reassuring and advising how to avoid predisposing factors with lifestyle modification. It is especially important to recognize the difference between the effects of lifestyle modification on reducing of syncope episodes in hypertensive patients compared to normotensive patients. Many patients with vasovagal syncope can be effectively treated with education, reassurance and changes in diet such as increase in dietary salt and fluid intake. In others, treatment involves removal or avoidance of agents that predispose to hypotension or dehydration. However, when these measures fail to prevent the recurrence of symptoms, other treatments such as pharmacological therapy can be used with a limited effectiveness (9). Although many treatment options have been proposed and/or demonstrated to be effective based on observational studies, there is a remarkable absence of data from large prospective clinical trials in hypertensive patients. Encouraging new data suggest that a program involving tilt training can effectively prevent vasovagal syncope.
In hypertensive patients, a more aggressive treatment strategy with need of a prophylactic pharmacologic therapy is limited. Most of these patients did not undergo specific treatment but received education for avoiding syncope after an abnormal HUT. The results of the present study demonstrated that management of syncope in hypertensive patients with focus on conservative measure has a limited effectiveness.

5.1. Conclusions

Our study demonstrated that hypertensive patients with vasovagal syncope are less responsive to the lifestyle modification compared to the patients with normal blood pressure. Good compliance is a concern in lifestyle modification. The explanation can be that the old patients may not restrict in diet and forget recommended changes in diet.

5.2. Study Limitations

This study has all limitations of a nonrandomized study. Dosage of antihypertensive drugs, time relation between drug ingestion and syncope, changes in dosage and syncope should be considered in a randomized study. We suggest further studies to evaluate a relationship between the type of drug or changes in drug dosage and occurrence of syncope in patients with vasovagal syncope and hypertension.

References
