Assessment of Lower Urinary Tract Symptoms (LUTS) in hypertensive men

Nejra Gondžetović¹, Zaim Jatić¹,², Ago Omerbašić²

¹ The Public Institution Health Centre of Sarajevo Canton, Sarajevo, Bosnia and Herzegovina
² Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Abstract

Introduction: Lower urinary tract symptoms are highly prevalent in aging population, particularly in men. Comorbidities, such as diabetes mellitus, hypertension, heart failure and metabolic syndrome are contributing the progression of these symptoms. The aim of this study is to assess the association between the degree of lower urinary tract symptoms with hypertension.

Methods: Patients are men 50 – 70 years of age (n= 206), who do not have any prostate pathology and had no surgical interventions regarding LUTS, nor use organ specific symptom relief therapy. The data were collected during two months, from April to June 2018. In this cross-sectional study we used IPSS questionnaire to assess lower urinary tract symptoms.

Results: The mean age of patients is 60.6. Of the total number of patients, 67% have hypertension. It was found that there is a significant positive correlation between the age and the IPSS, while no significant variation was detected in the total IPSS between patients who suffer from hypertension and those who do not. The probability that patients with hypertension have moderate or severe symptoms of lower urinary tract is 1.54 times higher than in patients without hypertension. No significant correlation has been noted between the amount of cigarettes consumed annually and the severity of LUTS according to IPSS.

Conclusion: In family medicine, men suffering from hypertension do not have more intense lower urinary tract symptoms according to the IPSS than those who do not have hypertension, regardless of the age group.

Keywords: lower urinary tract symptoms, prostate, hypertension, men

© 2018 Folia Medica Facultatis Medicinae Universitatis Saraiensis. All rights reserved.
es of prostate and bladder and previous surgical treatments for LUTS. In order to collect data about health status and severity of LUTS in studied population, we used questionnaire containing 29 questions divided in three sections: demographic data - age, health data and International prostate symptom score (IPSS).

The following health data were collected: average blood pressure from three latest measurements noted in medical record, body mass index, smoking status and alcohol consumption, anamnestic data regarding chronic prostate diseases in examinees’ close male family’s members: brother and/or father. The data was collected from medical records and/or was provided by patient. Several medical information were excluded from analysis, due to lack of statistical significance. Examinees answered questions from IPSS, rating present severity of LUTS and quality of life. A total score 0-7 was labelled as IPSS negative, and ≥ 8 or higher as IPSS positive. Examinees were split in two age groups, first – younger age group (aged 50 – 60) and second – older age group (aged 61 – 70).

Statistical analysis

Descriptive data (age, BMI, IPSS) are presented with measures of central tendency (mean, mode, median) and standard deviation (SD). Categorical variables are presented with frequency (N) and percentage (%). Spearman rank – order correlation and Pearson correlation coefficient were used to investigate the correlation between continuous variables, such as IPSS and age. For dichotomous variables (hypertensive/ non-hypertensive examinee, younger age group/ older age group) comparison independent samples t-test, chi – square test and Fishers’ exact U test were used. Logistic regression analysis was performed to assess the association between having hypertension and positive IPSS. A p value lower than 0.05 was considered statistically significant. Statistical analysis was performed using statistics software IBM – SPSS version 23.

Results

Informed consent was given by 206 examinees of 213 patients who were proposed to be included in the research (response rate = 97%). Mean age was 60 years (± 5.59). Positive family history of prostate disease (benign prostatic enlargement and prostatic cancer) is present in 19% examinees. Only 5 examinees have positive family history for both family members. In the studied population 39% are non-smokers, 31% smokers and 30% former smokers, while 59% consume alcohol.

Hypertension is present in 67% examinees. According to average values of blood pressure obtained in three latest measurements, 184 examinees have increased blood pressure and 22 normal. Based on average systolic blood pressure of 133.42 mmHg and diastolic blood pressure of 85.24 mmHg, with small variation of blood pressure values in age groups, majority of examinees have prehypertension (normal – high blood pressure). Increased body mass index is present in 51% examinees, while 25% are obese. (Table 1)

Table 1. Clinical characteristics of participants

<table>
<thead>
<tr>
<th></th>
<th>50 – 60 years of age</th>
<th>60 – 70 years of age</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>113</td>
<td>93</td>
<td>206</td>
</tr>
<tr>
<td>BMI, M</td>
<td>27.56</td>
<td>27.8</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>61.1%</td>
<td>72.4%</td>
<td>67.0</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>17.0%</td>
<td>26.0%</td>
<td>21.0</td>
</tr>
<tr>
<td>Positive IPSS</td>
<td>34.0%</td>
<td>53.0%</td>
<td>42.2</td>
</tr>
<tr>
<td>Comorbidities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Cardiomyopathy</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Gonarthrosis</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Lower back pain</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>COPD</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Glaucoma</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Age and LUTS

Among younger age group examinees IPSS is positive in 34%, while the same value is positive in 53% examinees in older age group. More severe lower urinary tract symptoms have been found in examinees from older age group (61 – 70 years of age) (χ²(2, N = 206) = 7.596, p = 0.006.) Probability of having positive IPSS is considerably higher in older examinee compared to younger age group examinee. (OR = 2.2, 95%CI - 1.25 – 3.86). (Table 2)

Significant difference in mean value of certain LUTS symptom severity has been noted between two age groups. One-way ANOVA test has shown that older examinees have significantly higher mean values of severity of intermittent stream, weak stream and urgency, according to symptom values in IPSS compared to younger examinees. (Table 3)

Hypertension and LUTS

Absence of significant difference in total IPSS between examinees with hypertension compared to examinees without hypertension has been noted, even after correction for age. Examinee with hypertension is 1.54 times more likely to have moderate or severe lower urinary tract symptoms compared to examinee without hypertension (X²(N = 206) = 2.003, p = 0.178), (OR= 1.54, 95%CI – 0.85 – 2.8).
Discussion

Main findings
Our study shows that men with hypertension did not have more severe LUTS compared to those without hypertension, nor has there been found significant difference in obstructive and irritative score values between these two participant groups. Older men have more severe lower urinary tract symptoms.

Findings from preceding/existing literature
Cross-sectional study conducted in Paris has shown a significant association between LUTS severity and metabolic syndrome. It has been found that the average IPSS is two points or higher in patients suffering from metabolic syndrome compared to healthy patients. A positive association has been found between hypertension, diabetes mellitus and hypertriglyceridemia with increased IPSS and moderate/severe LUTS. (9) Link between increased number of vascular risk factors and LUTS, as well as hypertension and LUTS has been found in several studies. (4,5,10)

Sugaya et al have estimated the change in IPSS in patients with benign prostatic hyperplasia after treatment with alpha blocker, terazosin, for twelve weeks. However, linear regression has not shown significant association between hypertension and LUTS according to IPSS (p = 0.916, 95% CI -9.89-10.89).

Significantly higher symptom severity value of incomplete bladder emptying has been found in examinees with hypertension (F (1, 204) = 7.689, p = 0.006).

There has been no significant difference found in mean values of obstructive symptoms severity in examinees with hypertension (5.23 ± 4.38) compared to examinees without hypertension (4.22 ± 4.37), t (204) = -1.570, p = 0.118.

There has been no significant difference found in mean values of irritative symptoms severity in examinees with hypertension (3.11 ± 2.67) compared to examinees without hypertension (2.80 ± 2.59), t (204) = -0.783, p = 0.435), nor between examinees with positive and negative smoking anamnesis.

Positive correlation between IPSS and participants’ presenting dissatisfaction with maintaining current severity of LUTS has been noted (rs (206) = 0.703, p = 0.01). Dissatisfaction with current symptoms is in statistically more significant and stronger correlation with LUTS severity in younger age group (rs (206) = 0.774, p = 0.01), compared to older age group (rs (206) = 0.581, p = 0.01).

However, linear regression has not shown significant association between hypertension and LUTS according to IPSS (p = 0.916, 95% CI -9.89-10.89).

Significantly higher symptom severity value of incomplete bladder emptying has been found in examinees with hypertension (F (1, 204) = 7.689, p = 0.006).

There has been no significant difference found in mean values of obstructive symptoms severity in examinees with hypertension (5.23 ± 4.38) compared to examinees without hypertension (4.22 ± 4.37), t (204) = -1.570, p = 0.118.

There has been no significant difference found in mean values of irritative symptoms severity in examinees with hypertension (3.11 ± 2.67) compared to examinees without hypertension (2.80 ± 2.59), t (204) = -0.783, p = 0.435), nor between examinees with positive and negative smoking anamnesis.

Positive correlation between IPSS and participants’ presenting dissatisfaction with maintaining current severity of LUTS has been noted (rs (206) = 0.703, p = 0.01). Dissatisfaction with current symptoms is in statistically more significant and stronger correlation with LUTS severity in younger age group (rs (206) = 0.774, p = 0.01), compared to older age group (rs (206) = 0.581, p = 0.01).

DISCUSSION

Main findings
Our study shows that men with hypertension did not have more severe LUTS compared to those without hypertension, nor has there been found significant difference in obstructive and irritative score values between these two participant groups. Older men have more severe lower urinary tract symptoms.

Findings from preceding/existing literature
Cross-sectional study conducted in Paris has shown a significant association between LUTS severity and metabolic syndrome. It has been found that the average IPSS is two points or higher in patients suffering from metabolic syndrome compared to healthy patients. A positive association has been found between hypertension, diabetes mellitus and hypertriglyceridemia with increased IPSS and moderate/severe LUTS. (9) Link between increased number of vascular risk factors and LUTS, as well as hypertension and LUTS has been found in several studies. (4,5,10)

Sugaya et al have estimated the change in IPSS in patients with benign prostatic hyperplasia after treatment with alpha blocker, terazosin, for twelve weeks. One group of patients with BPH had hypertension,

However, linear regression has not shown significant association between hypertension and LUTS according to IPSS (p = 0.916, 95% CI -9.89-10.89).

Significantly higher symptom severity value of incomplete bladder emptying has been found in examinees with hypertension (F (1, 204) = 7.689, p = 0.006).

There has been no significant difference found in mean values of obstructive symptoms severity in examinees with hypertension (5.23 ± 4.38) compared to examinees without hypertension (4.22 ± 4.37), t (204) = -1.570, p = 0.118).

There has been no significant difference found in mean values of irritative symptoms severity in examinees with hypertension (3.11 ± 2.67) compared to examinees without hypertension (2.80 ± 2.59), t (204) = -0.783, p = 0.435), nor between examinees with positive and negative smoking anamnesis.

Positive correlation between IPSS and participants’ presenting dissatisfaction with maintaining current severity of LUTS has been noted (rs (206) = 0.703, p = 0.01). Dissatisfaction with current symptoms is in statistically more significant and stronger correlation with LUTS severity in younger age group (rs (206) = 0.774, p = 0.01), compared to older age group (rs (206) = 0.581, p = 0.01).
while patients in second group did not suffer from hypertension. Before treatment with terazosin, IPSS was higher in patients with hypertension, compared to non-hypertensive patients. The difference in IPSS was additionally increased after use of terazosin, which was followed by decrease of blood pressure in both groups. However, differing decrease of IPSS after use of equal dosage of the drug indicates that hypertension may be the cause of LUTS manifestation.(11) Stranne et al have confirmed positive association between LUTS and age in study from 2004. The research has included 2106 Swedish men who were contacted by phone, 33.4% of whom had IPSS > 8 and were considered LUTS-positive. In this group of patients, 43% have noticed symptoms development more than 2 years before the interview, 41% have asked for professional medical assistance, while 26% considered consulting with urologist. There has been found very strong correlation between IPSS and age (p = 0.0001) using Pearson correlation test.(12)

**Strengths of the study**

We have managed to invite many irregular patients for the research, making it possible to give them a systematic check up at the same time. Also, a large portion of examinees have not payed attention to existing lower urinary tract problems before the study and were highly motivated afterwards to get additional screening and visit urologist.

**Limitations**

Relatively small sample and relying on subjective examinees’ evaluation of symptoms by answering IPSS questions are the weak points of our study. We consider that, for a more detailed analysis of association between hypertension and LUTS, a greater sample of patients should be assessed.

**CONCLUSION**

Based on results acquired in the study, we conclude that men in examined population with hypertension do not have more severe lower urinary tract symptoms compared to non-hypertensive men, regardless of the age group. More severe LUTS in older age group has supported previous observations of strong correlation between age and symptoms progression. Due to significantly higher odds ratio for increase of LUTS intensity in men with hypertension, we recommend doctors in family medicine to assess LUTS periodically using IPSS in patients older than 50 years of age.

**Declaration of interest**

The authors declare no conflicts of interest.

**REFERENCES:**