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Assessment of symptoms and signs of benign prostatic hyperplasia using the International Prostate Symptom Score in clinical practice

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Abstract

Introduction: Benign prostatic hyperplasia (BHP) is one of the most common, progressive diseases in elderly men. It is very important to diagnose this disease in its early stages. The international prostate symptom score (IPSS) is a very helpful tool to be used for this purpose.

Aims: The main goal of this study was to analyze the signs and symptoms of benign prostatic hyperplasia and its impact on a patient's quality of life.

Patients and Methods: This descriptive randomized study included 112 male examinees aged 50-70 years. We used IPSS as a survey tool.

Results: The average age of the examinees was 61.02 (± 6,18). 56.3% of examinees had mild symptoms, 31.3% had moderate symptoms and 12.5% of our examinees had severe lower urinary tract symptoms. Nocturia was the most common symptom. Irritative symptoms were present in 76.8% of examinees compared to obstructive symptoms which occurred in 8.9%, and 14.3% had both types of symptoms. Hypertension was the most common comorbidity (in 50.9% of cases). The majority of examinees answered that they would be satisfied with their quality of life if their symptoms do not change in the future.

Conclusions: Assessment of symptoms and signs of benign prostatic hyperplasia using IPSS in clinical practice has proven to be useful in the timely approach of clinical physicians.

Keywords: Benign prostatic hyperplasia; IPSS-International prostate symptom score; Quality of life

1. Introduction

Benign prostatic hyperplasia (BPH) is defined as the proliferation of prostate stromal cells that leads to its enlargement. As hyperplasia develops, the urethra gradually narrows, which causes a large number of unpleasant and disturbing

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symptoms and can later lead to complications (1). BPH is one of the most common diseases of older men, which consequently leads to symptoms of the lower part of the urinary tract (2). The progression of the disease can end in complications such as acute or chronic urinary retention, urinary tract infections, hematuria, and the formation of bladder stones, as well as the need for surgery, which is one type of complication (3).

Globally, the incidence of benign prostatic hyperplasia is increasing. From 5,.48 million in 1990, the incidence increased to 11.26 million in 2019 (4). The risk increases with age. In men aged 46 years who have no symptoms, the risk of developing of benign prostatic hyperplasia over the next 30 years is estimated to be 45% (5).

Symptoms can be classified as obstructive and irritative. Obstructive symptoms of the lower urinary system that are mainly analyzed for the evaluation of the clinical condition include waiting to start urination, weak stream of urine, interruption of the flow of urine, and dripping after completion of urination. Irritative symptoms include nocturia, frequent urination, urgency, dysuria, and the feeling of incomplete emptying of urine (6). Symptoms of the lower part of the urinary tract are also associated with erectile dysfunction (3).

The first-line treatment for benign prostatic hyperplasia patients with moderate-to-severe symptoms includes the use of either alpha 1-adrenergic blockers or 5 alpha-reductase inhibitors. Treatment with 5 alpha-reductase inhibitor dutasteride as mono or combination therapy significantly improves symptom scores, urinary flow rate as well as total prostate volume (7).

Although it is not a life-threatening condition, the impact of benign prostatic hyperplasia on the quality of life can be very significant and should not be ignored. According to the World Health Organization, the estimate of potentially lost years of life due to earlier mortality and productive years of life due to disability is quite worrying. Accurate and early diagnosis of benign prostatic hyperplasia leads to a better treatment outcome and determines the choice of treatment (8).

International prostate symptom score has become an integral part of the evaluation of patients with symptoms of the lower part of the urinary tract and/or benign prostatic hyperplasia and is recommended as a precise tool, i.e. an initial method in the diagnosis and monitoring of treatment results in such patients (9).

This study is the first one conducted in Bosnia and Herzegovina in which IPSS score is used on family medicine level as diagnostic tool for screening for BPH before directing patient to urologist for final diagnose.

The aims of this study were to use IPSS to analyze the symptoms and signs of benign hyperplasia and to evaluate the quality of life of patients with BPH.

2. Material and methods

2.1. Study Design

A descriptive randomized included male respondents who came for examination at the Family Medicine Clinic "Centar" of the Zenica Health Center. The research was conducted in May 2018.

Before starting the survey, the goals, voluntary participation, the average time needed to fill out the survey questionnaire, and that the survey questionnaire itself is anonymous and confidential were explained to the patients.

Inclusion criteria were male patients aged 50 - 70 who come for the examination to the family medicine clinic, patients who do not have an established diagnosis of benign prostatic hyperplasia,

Exclusion criteria were patients with an established diagnosis of benign prostatic hyperplasia, patients unable to fill out the questionnaire independently, patients who belong to the group of psychiatric patients, incapable of independent care making decisions.

2.2. Research methods

The conducted research was descriptive randomized. In conducting the research, we used the standardized IPSS, which contains seven questions related to the severity of urination symptoms or filling symptoms (10). Four questions refer to urination symptoms and three to filling symptoms. The answers are expressed in six categories depending on the degree of expressed symptomatology. The maximum score is 35 points; a score from 0 to 7 generally indicates mild

complaints, 8-19 points mean severe, and above 20 points indicates serious or severe complaints. The position of the European Association of Urologists (EAU) on the importance of IPSS for deciding on a therapeutic option is such that mild symptoms represent a category of patients for whom the concept of monitoring and observation is sufficient, moderate symptoms indicate the use of drug therapy, and patients with serious complaints represent an indication area for surgical treatment (10). One recommended question is included for evaluating the Quality of Life, and the answer is expressed in numbers from 0 to 6 (11,12).

2.3. Statistical analysis

The SPSS (SPSS-Statistical Package for Social Sciences) computer program version 19.0 was used for the statistical processing of the obtained data. The results are presented tabularly or graphically. The normality of the distribution of the observed variables in the study was analyzed by the Kolmogorov-Smirnov test. The results of descriptive statistics for numerical variables are represented by a median with an interquartile range (25-75 percentile), and for categorical variables by percentage. The difference between the two observed groups for categorical variables was analyzed with the Hi2 test. The difference between the three groups was analyzed for numerical variables with the Kruskal-Wallis test, and the two groups with the Mann-Withney U, non-parametric test. The degree of correlation was examined by the Spearman or Pearson test. Values of $p<0.05$ were taken as statistically significant.

3. Results

The survey included 112 male respondents, and the data distribution is presented graphically and tabularly for each question individually.

The average age of the respondents who participated in the survey was 61.02 (±6,18) years.

Table 1 Questionnaire for BPH patients (IPSS, International Prostate Symptom Score)

In the past months:	**Never**		**Less than 1 in 5 urinations**		**Less than half of the cases**		**Approximately half of the cases**		**More than half of the cases**		**Almost always**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Have you had the feeling that you did not empty your bladder completely after you stopped urinating?	55	49.1	27	24.1	15	13.4	4	3.6	5	4.5	6	5.4
Has it ever happened that the interval between urination was less than two hours?	45	40.2	35	31.3	13	11.6	10	8.9	8	7.1	1	0.9
Did you have a weak stream of urine?	51	45.5	18	16.1	18	16.1	10	8.9	7	6.3	8	7.1
Have you had an intermittent stream of urine (interruption and restart of urination)?	54	48.2	23	20.5	19	17.0	8	7.1	3	2.7	5	4.5
Did you have to strain and strain to start urinating?	67	59.8	17	15.2	6	5.4	10	8.9	7	6.3	5	4.5

Of the symptoms that occurred, nocturia was the most frequently reported, in 88,4% of respondents. In 40.2% of patients nocturia occurred once while in 48.2% of patients the frequency was twice or more.

About half of respondents reported that they had difficulties in the previous month regarding retention of urine in the bladder after urination, urination delay and interval between urination that is less than two hours, weak stream of urine, frequency of intermittent streams of urine and frequency of straining to start urinating. In the question regarding straining to start urinating, less half of respondents (40.2%) reported that they had difficulties.

About half of respondents reported that they would be satisfield of the quality of contnuing life with the assumption that the current problems remain the same.

Results of the IPSS show that Median IPSS values are 6; Interquartile range 2-15 and range min.- max. 0-32. Furthermore, 12.5% of subjects had severe symptoms of the disease, 31.3% of them had moderate symptoms of the disease, and 56.3% of the subjects had mild symptoms of prostate disease.

Figure 1 shows a correlation and a strong positive association between the total sum of points of the IPSS and the assessment of the patient's quality of life, with significance at the level of p<0.001.

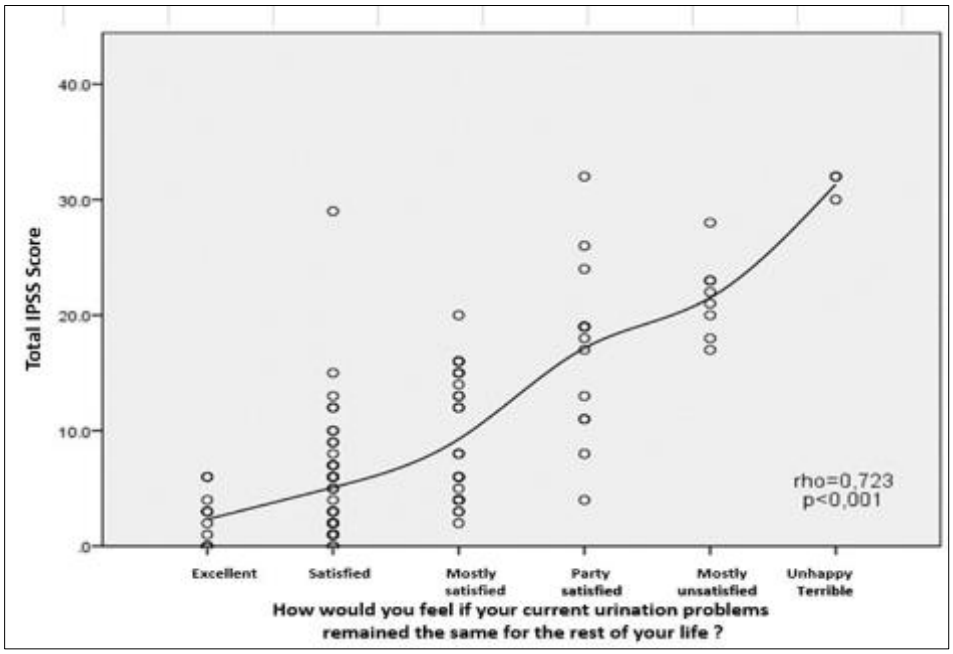

Figure 1 Assessment of quality of life by correlation with the International Prostate Symptom Score (IPSS)

Of all the comorbidities, most subjects suffered from arterial hypertension (50.9%), followed by diabetes mellitus in 17.9% of subjects. 11.6% of subjects had other diseases of the cardiovascular system, 9.8% of subjects had diseases of the musculoskeletal system, 5.4% of subjects had diseases of the respiratory system, 2.7% of subjects had kidney diseases and 1.8% of subjects had malignancy.

Most respondents 86 (76.8%) had signs of irritant symptoms, while 10 (8.9%) were found to have obstructive symptoms. An equal share of symptoms was observed in 14.3% of subjects. In the comparison of irritative and obstructive symptoms, it was determined that irritative symptoms are significantly more frequent.

The most respondents (57.1%) answered that they turn to their husband/wife first, then 39.3% of them turn to the doctor first, while 3.6% turn to their mother first when they have health problems.

4. Discussion

In our study we showed that timely screening, of BHP in the family doctor's clinic using IPSS, enables identification of the initial stage of BHP, and prevention of severe symptoms emergence.

Our study showed that most subjects had mild symptoms (56.3%), a smaller number of subjects had moderate symptoms (31.3%), and only 12.5% of our subjects were in the category with severe lower urinary tract symptoms. The most common symptom was nocturia occurring in 88.4% of respondents. Other studies also show that nocturia is a common symptom. In cross- sectional study with 373 men older than 50 years, nocturia occurred in 58.9% patients with benign prostatic hyperplasia (13). Findings of a study conducted on 156 men aged 69 and over, are that nocturia occurred once in 96.7% and more than once in 85.9% patients with benign prostatic hyperplasia (14).

In our study, the largest number of respondents (76.8%) had irritative and mild symptoms which indicates the initial stage of the disease. Obstructive symptoms were dominant in 8.9% of patients while an equal ratio of irritative and obstructive symptoms was found in 14.3% of patients.

Similar results were obtained by Jhang et al., who evaluated 849 subjects and found that the majority with mild symptoms, had predominant irritative symptoms, while subjects with severe symptoms had predominant obstructive symptoms (15).

In our study, the most common comorbidities were arterial hypertension (50.9%), followed by diabetes mellitus in 17.9% of subjects. This is less in comparison with results in large retrospective observational study on 7.103 patients with benign prostatic hyperplasia in which the most prevalent comorbidity was hypertension in 64.9% of patients, followed by diabetes mellitus, hypercholesterolemia, coronary artery disease, and other dyslipidemias (16). In other studies, diabetes mellitus as well arterial hypertension are usually seen as comorbidities in older patients with benign prostatic hyperplasia (17,18).

In our research, the goal was also to assess the quality of life of the respondents. The largest number (42%) of respondents would be satisfied if their problems remained the same. Given that most respondents had mild symptoms (56.3%), these results were expected.

Many studies have analyzed the relationship between the severity of symptoms and the quality of life of benign prostatic hyperplasia patients. Cruz-Ferreira et al conducted a pilot study involving 105 men with an average age of about 64 years. According to the IPSS results 22% of subjects with moderate symptoms answered that they had a poor quality of life, while 50% of subjects with severe symptoms had the same. This showed that quality of life declines as the severity of symptoms increases (19).

In the study, out of a total of 1.617 examined men, the conclusion is that older people with greater comorbidities that have more influence on daily activities have a worse quality of life (20). Inclusion of medical therapy in patients with benign hyperplasia showed efficiency and significant improvement in quality of life (21). Although all the drugs used in benign prostatic hyperplasia therapy are effective, they have different side effects, and the choice of therapy can have an impact on comorbidities (22). Current facts justify fix combination 5-Alpha reductase inhibitors and alpha-adrenergic blockers (dutasteride/tamsulosin) as a therapy in the treating benign prostatic hyperplasia. It is believed that different mechanisms of action are responsible for the effectiveness in the treatment of BPH with this combination (21.23).

A study of 4.722 patients showed dutasteride/tamsulosin is effective in the treating benign prostatic hyperplasia as well as improving nocturia (24).

Fixed combination therapy dutasteride/tamsulosin shows efficiency and safety in men with moderately enlarged prostates and moderate to severe symptoms by reducing nocturia score and clinical progression (23). This combination therapy was significantly superior to tamsulosin but not dutasteride. Furthermore, as a monotherapy, dutasteride was not shown to be inferior to the combination.

Our study has several limitations. First, study have been conducted in single center trial. Furthermore, small number of subjects have been conducted in study and the short duration of the study of one month also limited the study.

5. Conclusion

We demonstrated that IPSS enables the categorization of benign hyperplasia based on identification of symptoms and comorbidity. In our study most patients had mild symptoms and the most common was nocturia. Of the comorbidities, arterial hypertension was the most common, followed by diabetes mellitus.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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Authors declaration

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Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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Attachment

- Questionnaire for BPH patients (IPSS-International Prostate Symptom Score)

No	During the past month, how often...	Never	Less than 1 in 5 urinations	Less than half of the cases	Approximately half of the cases	More than half of the cases	Almost always	YOUR RESULT
1	...you had the feeling that you did not completely empty your bladder after you stopped urinating?	0	1	2	3	4	5	
j2	...does it happen that the interval between urination is less than two hours?	0	1	2	3	4	5	
3	...have you had an intermittent stream of urine (interruption and restart of urination)?	0	1	2	3	4	5	
4	...Did you find it difficult to postpone urination?	0	1	2	3	4	5	
5	...You had a weak stream of urine?	0	1	2	3	4	5	
6	..had to strain and tense up to start urinating?	0	1	2	3	4	5	

7.	During the past month, how many times did you have to get up to urinate between the time you went to bed and the time you got up in the morning?	Never	Once	Twice	Three times	Four times	Five or more times	
		0	1	2	3	4	5	
							TOTAL	

Interpretation of your IPSS result

- 1-7: Based on your answers, it seems that the symptoms of the disease are mild
- 8-19: Based on your answers, it seems that the symptoms of the disease are moderate
- 20 +: Based on your answers, it seems that the symptoms of the disease are severe
- Quality of life due to urinary symptoms

How would you feel if your current urination problems remained the same for the rest of your life?

Excellent	**Satisfied**	**Mostly satisfied**	**Partially satisfied/dissatisfied**	**Mostly dissatisfied**	**Unhappily**	**Terribly**
0	1	2	3	4	5	6