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Is it True That Intravesical Prostatic Protrusion Affects The International Prostatic Symptom Score In Patients With Benign Prostate Enlargement

Farras Arsyi Addaruqutni[1], Ana Majdawati [2], Bernardus Bona Wisesa[3], Ageng Setya Budi Mazaya[4]

[1,3,4] Prodi Pendidikan Dokter, Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Muhammadiyah Yogyakarta, Indonesia
[2]Bagian Radiologi, Prodi Profesi Dokter, Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Muhammadiyah Yogyakarta, Indonesia

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Email :
farrasarsyi@gmail.com

ABSTRACT

Benign Prostatic Hyperplasia (BPH), also known as benign prostate enlargement, is among the most common benign tumors affecting men, with a prevalence and incidence that increases with age, categorized as one of the genitourinary issues. In Indonesia, there are 9.2 million reported cases of BPH in men over 60 years old. Intravesical Prostatic Protrusion (IPP) is one manifestation of Benign Prostatic Hyperplasia (BPH) development. Patient complaints associated with Benign Prostatic Hyperplasia (BPH) can be assessed through the International Prostatic Symptom Score (IPSS). This study aims to investigate the potential relationship between Intravesical Prostatic Protrusion (IPP) and patient complaints assessed by the International Prostatic Symptom Score (IPSS) in individuals diagnosed with BPH. This research employed an observational cross-sectional study design and utilized the chi-square correlation test. Data from 67 Benign Prostatic Hyperplasia (BPH) patients, all displaying prostate protrusion, were categorized into three groups based on the degree of protrusion observed on prostate ultrasound: grade I, grade II, and grade III. IPSS scores were measured using the Indonesian version of the IPSS questionnaire, where patients self-assessed their symptoms and were categorized into mild, moderate, or severe groups. Analysis using the chi-square correlation test revealed a p-value of 0.208, signifying the obtained p-value > 0.05. This suggests that no statistically significant relationship was found between the variables under investigation. The study concludes no significant relationship exists between Intravesical Prostatic Protrusion (IPP) and the International Prostatic Symptom Score (IPSS) in individuals diagnosed with Benign Prostatic Hyperplasia (BPH).

1. INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is defined by the American Urological Association (AUA) as a histological diagnosis that refers to the proliferation of smooth muscle and epithelial cells in the transition zone of the prostate (Nickel et al., 2010). This BPH condition is common in elderly men and is a common cause of lower urinary tract symptoms (Roehrborn, 2005). This condition can cause Bladder Outlet Obstruction (BOO) and Lower Urinary Tract Symptoms (LUTS) through two mechanisms: (I) thickening of the prostate that physically narrows the urethra (static component), and (II) the effect of increased smooth muscle tone (dynamic component).) (McVary et al., 2011). Although

the diagnosis of BPH is histological, doctors use a multi-faceted approach in evaluating men for possible BPH. Assessment of symptoms, patient history, physical examination including DRE, diagnostic imaging, including ultrasound or MRI of the prostate, and laboratory studies (Lokeshwar et al., 2019).

Benign Prostatic Hyperplasia (BPH) has several etiological factors, namely genetic factors, aging and androgen factors, inflammatory factors, and metabolic factors (Devlin et al., 2021; Madersbacher et al., 2019; Nickel et al., 2017; Sebastianelli & Gacci , 2018). The pathophysiology of Benign Prostatic Hyperplasia (BPH) also varies, starting from genetic factors and androgen factors (Devlin et al., 2021; Giri et al., 2015; Hellwege et al., 2019; Song et al., 2016). The main symptom of benign prostate enlargement is urination disorders. Complaints can range from mild to severe symptoms and interfere with daily work. Symptoms of Benign Prostatic Hyperplasia (BPH) can be grouped into 3, namely when filling the bladder with urine, when urinating, and after urinating. The diagnosis of Benign Prostatic Hyperplasia (BPH) consists of anamnesis in the form of patient complaints, physical examination including abdominal and rectal examination, and supporting examinations in the form of urine flow evaluation, imaging, and endoscopy.

The International Prostate Symptoms Score (IPSS) is a guide in the form of a questionnaire to identify symptoms early in BPH sufferers which was developed by the American Urological Association (AUA) and has been approved by the World Health Organization (WHO) (Monoarfa et al., 2017). The IPSS questionnaire consists of eight questions, seven about symptoms during the last 1 month period and one to assess quality of life or what is usually called Quality of Life (QoL). All questions refer to the following seven urinary symptoms: 1) Incomplete emptying, 2) Frequency, 3) Intermittency, 4) Urgency, 5) Weak Stream, 6) Straining, and 7) Nocturia. These seven questions relate to the questions that appear on the American Urological Association (AUA) Symptom Index which currently categorizes symptoms as follows: a) Mild (symptom score 7), b) Moderate (symptom score range 8-19, c) Severe (range symptom score 20–35) (Jindal et al., 2014)

The IPSS questionnaire used is the Indonesian version of the questionnaire and has been proven to have excellent validity and reliability so that it has the same objectives and functions as the WHO version. (Tangel et al., 2019).

Table 1. Example of the International Prostatic Symptoms Score (IPSS) questionnaire.

No	In the Last 1 Month	Never	Less than once a day in 5 days	Less than half	Occasionally (around 50%)	More than half	Almost always	Score
1	How often do you feel like there is still some left after urinating?	0	1	2	3	4	5	
2	How often do you have to urinate again less than 2 hours after you have finished urinating?	0	1	2	3	4	5	

3	How often do you find that you urinate intermittently?	0	1	2	3	4	5	
4	How often do you find it difficult to hold your urine?	0	1	2	3	4	5	
5	How often is your urine stream weak?	0	1	2	3	4	5	
6	How often do you have to push to start peeing?	0	1	2	3	4	5	
		Never	**1 time**	**2 time**	**3 time**	**4 time**	**5 time**	**Score**
7	How often do you have to get up to urinate, from the time you go to bed at night until you wake up in the morning?	0	1	2	3	4	5	
							Total IPSS Score	

Mild (1-7) Moderate (8-19) Severe (20-35)

Intravesical Prostatic Protrusion is a protrusion of the prostate starting from the bladder neck into the bladder cavity. This causes obstruction of the bladder through a ball valve mechanism, namely the lateral and medial parts of the prostate gland, causing the bladder to not be able to open completely when urinating. In this case, IPP can be said to be a developed form of BPH. The anatomical configuration of the prostate in the form of IPP has been

shown to have a good correlation to cause BOO. Intravesical Prostatic Protrusion (IPP) measurement uses the transabdominal saggital view ultrasound modality of the bladder and prostate. IPP measurements are taken from the protruding tip of the prostate to the base of the bladder using rading. IPP assessment uses 3 gradings, namely grade 1 (<5 mm), grade 2 (5-10 mm), and grade 3 (>10 mm) (Lee et al., 2010).

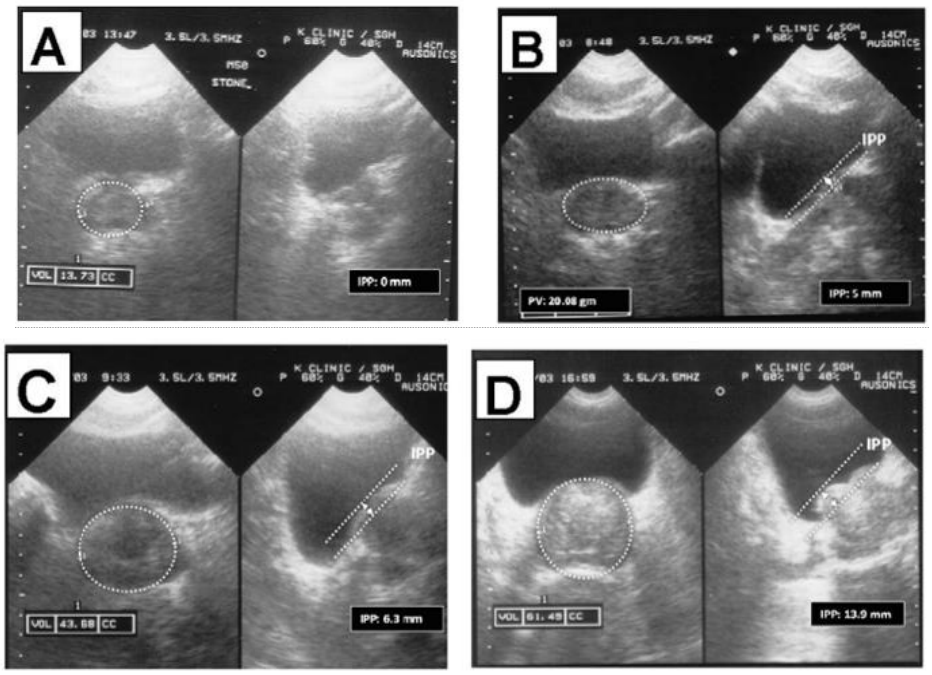

Figure 1. Ultrasound image, A) Normal prostate, no protrusion. B) Grade 1, protrusion 5 mm or less. C) Grade 2, protrusion of more than 5 to 10 mm Grade 3, protrusion more than 10 mm (Wang et al., 2015).

2. METHODS

The design of this study was observational with a cross sectional study, namely correlating the IPP value with the degree of protrusion on prostate ultrasound using secondary data (medical records) of BPH patients aged 42-85 years with a mean age of 58.21. The sample in this study was all medical record data of male patients with urinary complaints (suspected BPH) and filled out the International Prostatic Symptom Score (IPSS) questionnaire who came to Temanggung Regional Hospital, Central Java and underwent an ultrasound examination of the prostate at the hospital. The sampling method uses purposive sampling technique. Purposive sampling technique is used when researchers have criteria that match the research. This research uses transabdominal ultrasound image analysis in BPH patients to determine the severity of IPP. The severity of IPP obtained is then linked to the IPSS questionnaire to assess the patient's complaint score. The variables that have been obtained are then subjected to chi square correlation test analysis. Incomplete examination and complaint data as well as patient ultrasound results if there are other abnormalities are not included in this study.

3. RESULT AND DISCUSSIONS

Research on the relationship between Intravesical Prostatic Protrusion (IPP) and changes in the International Prostatic Symptoms Score (IPSS) in Benign Prostate Enlargement Patients in 2023 at Temanggung Regional Hospital has been completed. All samples met the inclusion and exclusion criteria that were established before data collection. Before collecting data, the researcher submitted a request for research ethics to the Muhammadiyah Ethics Research Management Information System (SIMEPKMU) and the Ethics Committee of Temanggung Regional Hospital which had received permission to collect data.

Table 2. Frequency Distribution of Intravesical Prostatic Protrusion (IPP)

	Amount Variable (n)	Percent (%)
IPP		
Grade I	0	0%
Grade II	19	28.4%
Grade III	48	71.6%

Table 2 shows that the majority of IPP in patients was grade III with 48 subjects or 71.6%, followed by IPP grade II with 19 subjects or 28.4%. In this study, IPP grade I was not found.

Table 3. Frequency Distribution of International Prostatic Symptoms Score (IPSS)

	Amount Variable (n)	Percent (%)
IPSS		
Mild	5	7.5%
Medium	38	56.7%
Severe	24	35.8%

Table 3 shows that the majority of IPSS scores in patients were in the medium category with 38 subjects or 56.7%, followed by the severe category with 24 subjects or 35.8%, and finally the mild category with 5 subjects or 7.5%..

Table 4. Relationship between Intravesical Prostatic Protrusion and International Prostatic Symptoms Score.

		International Prostatic Symptoms Score			
		Mild	Moderate	Severe	Total
Intravesical Prostatic Protrusion	Grade II	3	11	5	19
	Grade III	2	27	19	48
	Total	5	38	24	67

Table 4 shows 3 subjects with IPP grade II and IPSS scores in the mild category, 11 subjects in the moderate category, and 5 subjects in the severe category. There were 2 subjects with IPP grade III and IPSS scores in the mild category, 27 subjects in the moderate category, and 19 subjects in the severe category.

Table 5. Correlation test of Intravesical Prostatic Protrusion with the International Prostatic Symptoms Score

Variable	IPSS	Value	Interpretation
IPP	p-value	0.208	Negative correlation

The results of the analysis in table 5 using the chi-square test show that the p value = 0.208, which means the p value is > 0.05, which means H1 is rejected, so it can be interpreted that no statistically significant correlation was found between one variable and another variable, which in this study is Intravesical Prostatic Protrusion (IPP) with International Prostatic Symptoms Score (IPSS).

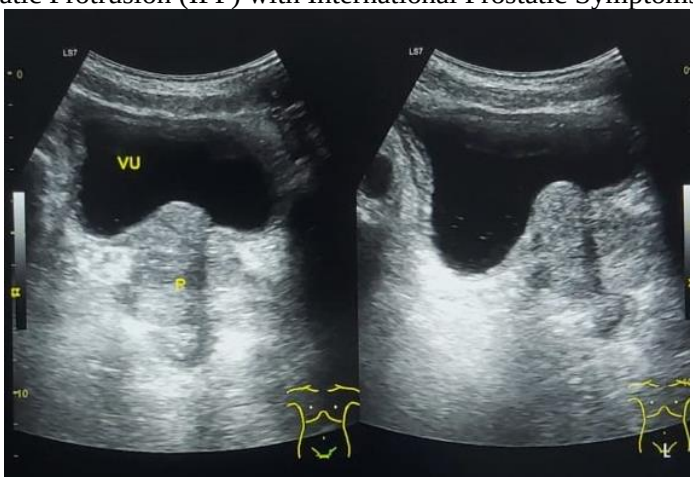

Figure 2. Protrusion of the prostate in the urinary bladder (Patient at Temanggung Regional Hospital)

The results of the analysis of BPH patients regarding the relationship between IPP and IPSS in this study did not show a significant relationship. This is in line with the statement (Monoarfa et al., 2017) which says that IPP alone cannot influence the IPSS score. Benign prostatic hyperplasia is just one of many factors that can cause LUTS symptoms. This research is also in line with research (Lee et al., 2010) which states that there is no significant relationship between the IPP category and the IPSS score. Changes in the IPSS score itself are useful in diagnosing disease.

This difference in results can also be influenced by the recording of IPSS scores carried out retrospectively so that the results can be influenced by the patient's memory of the complaints they feel. Apart from that, the patient's understanding and subjectivity in filling out the questionnaire also influences the IPSS score results. The results obtained in this study are also not in line with research conducted by (Tjahjojati, 2014) at Hasan Sadikin Hospital in Bandung in 2014 which found a significant relationship between IPP and IPSS. This difference may be due to the IPP measurement in this study being carried out transrectally. The advantage of this method is that it can assess prostate enlargement in a lateral direction. Nevertheless, transabdominal examination is a good standard of examination. This study was limited by the short-term research period and IPSS score data collection which was carried out some time after the patient underwent an examination (retrospective) and medical intervention occurred. According to the researchers' analysis and the results of this study, IPP does not function to replace the parameters used in clinical evaluation of BPH, one of these parameters is the IPSS score. The use of IPP is as a refinement of clinical evaluation which must be combined with other parameters such as IPSS, uroflowmetry, post-void residual urine, and prostate volume (Lee et al., 2010)

4. CONCOLUSION

Based on research conducted at Temanggung Hospital on BPH patients, the results were p > 0.05 in the correlation test, which means there is no significant relationship between Intravesical Prostatic Prutrussion (IPP) and the International Prostatic Symptoms Score (IPSS). For further research, it is recommended to measure the IPSS score directly during the examination so that the resulting results are more appropriate to the patient's condition. For further research, it is recommended that the IPSS questionnaire be filled out by competent medical personnel so that it does not cause misunderstandings in filling it out. For health workers, it is recommended to guide them in filling out the IPSS form because

the IPSS form is difficult for patients to understand, especially for the general public who are not health workers. For surgeons, it is hoped that they will not use the IPSS score as the main parameter for the severity of IPP because IPSS is only a refinement of clinical evaluation.

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