

Evaluation of Sonographic Prostate Volume in Relation with International Prostate Symptom Score.

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Conflict of interest: Nil

Abstract

Background: The severity of lower urinary track symptoms can be estimated by the International Prostate Symptoms Score (IPSS). IPSS has seven-point questionnaire with maximum total attainable score of 35 to evaluate baseline patient discomfort. IPSS is also used for follow up of patient's symptoms improvement. **Material & Methods:** The present prospective study was conducted at department of radiodiagnosis of our tertiary care hospital. The study duration was of six months from January 2019 to June 2019. A sample size of 100 was calculated at 95% confidence interval at 5% acceptable margin of error. Patients with lower urinary tract symptoms were enrolled in the study. All the patients underwent Transabdominal ultrasonography for the measurement of prostate size/volume. **Results:** In the present study, the Grading the severity of symptoms on the basis of IPSS score classify study participants in three groups. Out of the 22% patients had mild symptoms, 40% patients had moderate symptoms and 28% patients had severe symptoms. The prostate volume was calculated by calculating Prolate ellipsoid formula Antero-posterior x Transverse x Cranio-caudal x 0.52. 12% patients had prostatic volume of ≤ 20 cc, 26% patients had prostatic volume of 21 -30 (Grade I), 34% patients had prostatic volume of 31-50 cc (Grade II), 21% patients had prostatic volume of 51-80 cc (Grade III), 7% patients had prostatic volume of ≥ 80 cc (Grade IV) **Conclusion:** We concluded from the present study that we did not found any correlation between the age and international prostate symptom score and also we did not found any correlation between prostate volume or prostate enlargement grading and IPSS score.

Key words: Ultrasonography, prostate volume, IPSS score.

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Introduction

Benign prostate hyperplasia (BPH) is one of the most common age-related benign neoplasm among males. The incidence of benign prostate hyperplasia is age dependent with cases seen mostly after the age of 45 years [1]. Various studies reported that the prevalence is increased with age, by the age of 60 years its prevalence is reported more than 50% and

by the age of 85 its prevalence is reported around 90% [2]. The hyperplasia of stromal and epithelial cell of prostate leads to formation of discrete nodule around the periurethral region. These pathological changes leads to enlarged prostate gland and causing the lower urinary track symptoms (LUTS) in patients such as poor and/or intermittent stream, prolonged

micturition, straining, dribbling, feeling of incomplete bladder emptying. These symptoms are known as obstructive symptoms and other symptoms such as frequency, urge incontinence, urgency and nocturia known as storage symptoms [3].

The severity of LUTS can be estimated by the International Prostate Symptoms Score (IPSS). IPSS has seven-point questionnaire with maximum total attainable score of 35 to evaluate baseline patient discomfort. IPSS is also used for follow up of patient's symptoms improvement [4]. The measurement of prostatic size/volume by ultrasonography is an easily available method nowadays [5]. Trans abdominal sonography is easy to perform, less time consuming and provides specific measurements of prostate size/volume, post-void residual volume and its intravesical extension, also allowing simultaneous assessment of upper urinary tract and bladder [6]. Prostatic size/volume is also an important factor for selecting the treatment [7]. Hence, the present study was conducted to assess and evaluate the sonographic prostate volume in relation with international prostate symptom score at our tertiary care hospital.

Materials & Methods

The present prospective study was conducted at department of radiodiagnosis of our tertiary care hospital. The study duration was of six months from January 2019 to June 2019. A sample size of 100 was calculated at 95% confidence interval at 5% acceptable margin of error. Patients with lower urinary tract symptoms were enrolled in the study. All the patients underwent Transabdominal ultrasonography for the measurement of prostate size/volume. Clearance from

Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant.

All the study participants were undergone basic laboratory investigation including prostate specific antigen levels. The patients with proven prostatic carcinoma and serum Prostate Specific Antigen levels above 10 ng/ml, patients who had previous prostatic surgery were excluded from the present study. The International prostate symptom Score (IPSS) was obtained by clinical predesigned performance questionnaire and personnel interview with the patient, before the treatment. The questionnaire includes 1) Incomplete emptying 2) Frequency 3) Intermittency 4) Urgency 5) Weak stream 6) Straining 7) nocturia 8) Quality of life due to urinary symptoms. Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

Results

In the present study a total of 100 patients with lower urinary tract symptoms were enrolled in the study. All the patients underwent Transabdominal ultrasonography for the measurement of prostate size/volume. In our study the patients were aged from 41 to 82 years, the mean age of the enrolled patients was 64 ± 4.89 years. Out of total, majority of study participants 48% were in the age group of 61-70 years which was followed by 27% patients in 51-60 years age group which was followed by 21% patients in more than 70 years age group and 4% patients were in the age group of 40-50 years. (Table 1)

Table 1: Distribution of study participants according to age.

Age (years)	No. of cases
40-50	4%
51-60	27%
61-70	48%
>70	21%

In the present study, on the basis of IPSS score and prostatic volume on ultrasonography, the Grading the severity of symptoms on the basis of IPSS score classify study participants in three groups. Out of the 22% patients had mild symptoms, 40% patients had moderate symptoms and 28% patients had severe symptoms. The prostate volume was calculated by calculating Prolate ellipsoid

formula Antero-posterior x Transverse x Cranio-caudal x 0.52.

In the present study, on the basis of prostatic volume on ultrasonography, 12% patients had prostatic volume of ≤ 20 cc, 26% patients had prostatic volume of 21 - 30 (Grade I), 34% patients had prostatic volume of 31-50 cc (Grade II), 21% patients had prostatic volume of 51-80 cc (Grade III), 7% patients had prostatic volume of ≥ 80 cc (Grade IV) (Table 2)

Table 2: Distribution of study participants based IPSS score and prostatic volume.

Parameters		No. of cases
Grading the severity of symptoms	Mild	22%
	Moderate	40%
	Severe	38%
Prostatic volume	≤ 20	12%
	21 -30 (Grade I)	26%
	31-50 (Grade II)	34%
	51-80 (Grade III)	21%
	≥ 80 (Grade IV)	7%

Discussion

In the present study a total of 100 patients with lower urinary tract symptoms were enrolled in the study. All the patients underwent Transabdominal ultrasonography for the measurement of prostate size/volume. In our study the patients were aged from 41 to 82 years, the mean age of the enrolled patients was 64 ± 4.89 years. Out of total, majority of study participants 48% were in the age group of 61-70 years which was followed by 27% patients in 51-60 years age group which was followed by 21% patients in more than 70 years age group and 4% patients were in the age group of 40-50 years. Similar results were obtained in a study conducted by C Agrawal et al among 120 patients of enlarged prostate gland and causing the lower urinary track symptoms and reported similar findings to present study among majority of patients of enlarged prostate gland and causing the lower urinary track symptoms [8]. Similar results were obtained in a study conducted by Basawaraj NG et al among 126 patients

of enlarged prostate gland and causing the lower urinary track symptoms and reported similar findings to present study among majority of patients of enlarged prostate gland and causing the lower urinary track symptoms [9].

In the present study, on the basis of IPSS score and prostatic volume on ultrasonography, the Grading the severity of symptoms on the basis of IPSS score classify study participants in three groups. Out of the 22% patients had mild symptoms, 40% patients had moderate symptoms and 28% patients had severe symptoms. The prostate volume was calculated by calculating Prolate ellipsoid formula Antero-posterior x Transverse x Cranio-caudal x 0.52. Similar results were obtained in a study conducted by F-P Chuang et al among 99 patients of enlarged prostate gland and causing the lower urinary track symptoms and reported similar findings to present study among majority of patients of enlarged prostate gland and causing the lower urinary track symptoms [10]. Similar results were

obtained in a study conducted by Mostafa A et al among 1851 patients and reported similar findings to present study among majority of patients of enlarged prostate gland and causing the lower urinary track symptoms [11].

In the present study, on the basis of prostatic volume on ultrasonography, 12% patients had prostatic volume of ≤ 20 cc, 26% patients had prostatic volume of 21 - 30 (Grade I), 34% patients had prostatic volume of 31-50 cc (Grade II), 21% patients had prostatic volume of 51-80 cc (Grade III), 7% patients had prostatic volume of ≥ 80 cc (Grade IV). Similar results were obtained in a study conducted by Sanjeev S et al among 50 patients of enlarged prostate gland and causing the lower urinary track symptoms and reported similar findings to present study among majority of patients of enlarged prostate gland and causing the lower urinary track symptoms [12]. Similar results were obtained in a study conducted by G B Overland et al among 611 patients of enlarged prostate gland and causing the lower urinary track symptoms and reported similar findings to present study among majority of patients of enlarged prostate gland and causing the lower urinary track symptoms [13].

Conclusion

We concluded from the present study that we did not found any correlation between the age and international prostate symptom score and also we did not found any correlation between prostate volume or prostate enlargement grading and IPSS score.

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