Correlation between Prostate Volume and International Prostate Symptom Score with Quality of Life in Men with Benign Prostatic Hyperplasia in South-South, Nigeria

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ABSTRACT

Benign prostatic hyperplasia (BPH) is a disease of the ageing male. Clinically, patients present with lower urinary tract symptoms (LUTS) which are usually both storage and voiding secondary to bladder outlet obstruction. International prostate symptom score (IPSS) is used to asses symptom severity and the need for treatment. Prostate volume on the other hand, though important in evaluating the patient does not predict symptom severity. This study aimed to determine the correlation between prostate volume and IPPS with Quality of Life (Qol)in patients diagnosed with symptomatic BPH. This was a prospective study involving eighty nine patients aged 43 to 84 years seen at the Urology clinic between January to December 2018 in whom a detailed history, physical examination and transrectal ultrasound scan of the prostate was performed. The mean age of the patients was 64.02 ±9.60 years while the mean prostate volume was 64.94±42.95mls, mean IPSS was 14.47±5.28 and mean Qol was 4.55 ± 0.97. Correlation between prostate volume and IPSS was weak though statistically significant, no correlation was found between prostate volume and Qol. Prostate volume demonstrated a weak correlation with IPSS while there was no correlation with quality of life scale.

Keywords: Benign, Prostatic, Prostate, Hyperplasia, Volume, Life

INTRODUCTION

Benign prostatic hyperplasia has been known to be a common disease affecting ageing males. It is a progressive disease and patients usually present with lower urinary tract symptoms which may deteriorate over time.[1] Symptom progression has been shown to impact negatively on the health-related quality of life of the sufferers.[2] Lower urinary tract symptoms (LUTS) should be complemented with a rectal examination of the prostate for size although symptom severity is a better guide for BPH management than prostate volume.[3]

In 1992, Barry *et al.*[4] developed the American Urological Association (AUA) score and was later in 1994 adopted by the World Health Organization (WHO) as the international prostate symptom score (IPSS) meant to assess LUTS severity with the inclusion of the quality of life scale.[5] Each symptom is measured on a scale of 0-5 (0=No symptom to 5 = symptoms almost always present). Disease-specific quality of life (Qol) question assesses the level of satisfaction with the above symptoms ranging from 0 (Delighted) to 6 (Terrible). IPSS, besides assessing symptom severity is a useful tool for evaluating therapeutic outcome. Prostate volume can be crudely assessed by digital rectal examination, but a trans-rectal ultrasound scan (TRUSS) measurement is far more accurate[6] and only limited by the ability to assess the upper tracts for which trans-abdominal ultrasound scan can be used. This study aimed to evaluate thecorrelation between prostate volume and IPSS with Qolin men with symptomatic BPH.

MATERIALS AND METHOD

This study was carried out at the University of Uyo Teaching Hospital, Uyo in South-South Nigeria on men who were referred from the general out-patient clinic to urology clinic from January 2018 to December 2018 on account of LUTS. Exclusion criteria were patients diagnosed with prostate cancer, bladder cancer, Urethral stricture, history of prostate surgery and neurogenic bladder from any cause.

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Eighty-nine (89) patients who met the inclusion criteria were evaluated with detailed history taking, physical examination and relevant urological investigations. The inclusion criteria were patients who presented with LUTS, normal findings on rectal examination of the prostate and a PSA of <4.0ng/ml. The international prostate symptom score is a numerical scoring system meant to grade the severity of seven lower urinary tract symptoms based on the frequency of bother. Physical examination was detailed with a focused rectal examination to assess and characterize the nature of prostate enlargements. Relevant laboratory investigations including full blood count, renal function test, fasting blood sugar, Prostate-specific antigen (PSA), urine analysis, microscopy and culture were carried out. A trans-rectal ultrasound scan was used to measure the prostate volume using the prolate formula; AP X T X Cranio-caudal diameter x 0.52.

Statistical Analysis

Data from filled protocols was analyzed using statistical package for social sciences (SPSS) version 20. Descriptive statistics were used to find the frequency, mean and standard deviation for the variables while Pearson correlation was used to assess the relationship between prostate volume and IPSS/Qol. Statistical significance was set at $P<0.05$.

RESULTS

Eighty-nine (89) patients were evaluated with a mean age of 64.02±9.60 years ranging from 43 to 84 years. Majority of them were retired civil servants (38.2%) compared to other categories of occupation (Table 1). Mean IPSS was 14.47±5.28. Categories of symptom severity were 14.1%, 78.8%, 7.1% for severe, moderate and mild respectively. Mean Qol was 4.55±0.97. Mean prostate volume was 64.94±42.95mls while the mean PSA was 7.71±11.25ng/ml. Correlation between prostate volume and IPSS was weak but statistically significant; $r(89) = .25$, $P<.05$ and there was no correlation between prostate volume and Qol; $r(89) = .08$, $P>.05$.

Table 1: Categories of occupation of male patients in the Urology clinic referred on account of LUTS in 2018

	Frequency(n)	Percent(%)	Cumulative Percent(%)
Farming	9	10.1	10.1
Trading	10	11.2	21.3
Business	4	4.5	25.3
Civil Servant	23	25.8	51.7
Retired Civil Serv.	34	38.2	89.9
Clergy	9	10.1	100.0
Total	**89**	**100.0**	

Table 2: Descriptive statistics of parameters assessed in the index sample

	N	Mean	Standard deviation	Range
cAge	89	64.02	9.60	41.0
PSA	89	7.71	11.25	70.7
Prostate Volume	89	64.94	42.95	256.0
IPSS	89	14.47	5.28	30.0
Qol	89	4.55	0.97	4.0

Table 3: Showing Pearson correlation of Prostate volume

	Correlation	
	IPSS	QOL
Prostate Volume		
Pearson correlation	253	.088
Sig. (2- tailed)	.017*	.411
N.	89	89

*Correlation is significant at the .05 level.

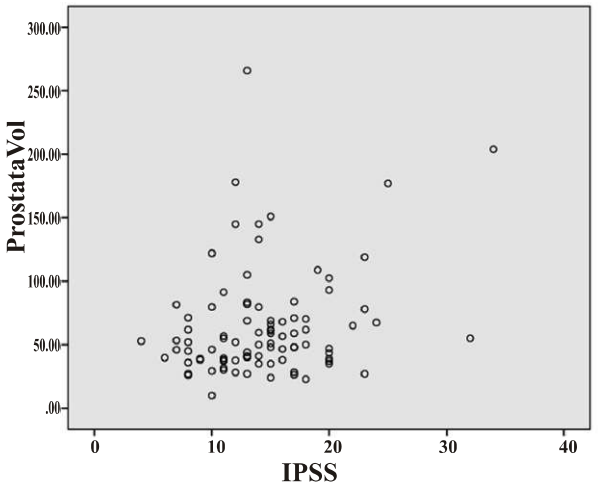

Figure 1: Scatter plot - Correlation between prostate volume and IPSS

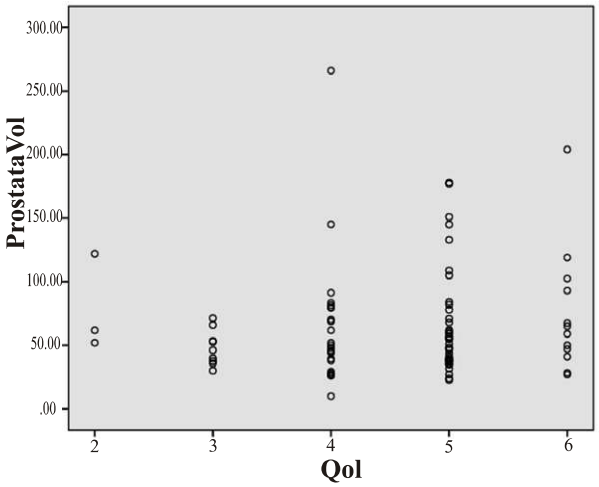

Figure 2: Scatter plot - Correlation between prostate volume and Qol.

DISCUSSION

BPH is a chronic and progressive disease[7] affecting ageing males with a reduction in health-related quality of life. The sufferers usually present with LUTS whose severity and degree of bother can be assessed with a World Health Organization (WHO) tool notably IPSS and QoL Scale. Measurement of prostate volume is an important adjunct in the management of BPH patients that may guide surgical technique and choice of medical therapy. Symptoms severity as categorized by IPSS is a useful tool to determine the need for treatment and assessment of treatment outcome.

In this study, we set out to determine the correlation between prostate volume and IPSS with Qol. Mean age of the patients was 64.02±9.60 years, majority of them were in their seventh (7^{th}) decade of life. This has been consistently reported by other authors[3,8-11] who also evaluated men with BPH symptomatology. Retired civil servants formed the bulk of the patients as compared to other categories of occupation. This is in line with the Nigerian Civil Service Rule where the retirement age is set at 60 years. But in another study[9] also documenting Nigerian men, farmers were more in number of which some of them may have retired from civil service and took to farming.

The mean value for IPSS was 14.47±5.28 and most of them (78.7%) had moderate symptoms. This same observation was recorded in other studies[8,9,12-14] across Africa and Asia. In the same continents of Africa and Asia, other studies documented predominantly severe symptom score.[15,16] This moderate to severe symptoms may be due to late presentation, further explained by lack of awareness of prostate diseases, superstition and poverty that plague some parts of Asia and Sub-Saharan Africa. Therefore, there is need for health awareness, education and poverty alleviation to solve many challenging conditions including symptoms due to BPH.

Mean prostate volume in this study was 64.94±42.95mls in gross excess of that recorded in another study in same south-south Nigeria (22.85mls). This is probably because the men in the latter group were evaluated in a screening programme who were also younger, in contradistinction to the ones that presented with symptoms and advanced age to our facility for care. A similar study in Europe and America [17] reported yet smaller prostate volumes which could be due to gross awareness and early

presentation for care typical of the Caucasians as opposed to late presentations in our environment.

Clinical BPH can be defined as prostate adenoma irrespective of size, causing varying degree of obstruction with or without symptoms .[18]McNeal[19] postulated the zones of the prostate that are involved in BPH being the transition zone (TZ) and the peri-urethral zone (PZ). Randall[20] reported that adenomatous growth from the TZ forms the lateral lobes while growth from the PZ forms the median lobe and that the degree of obstruction depends on where the growth is sited rather than the prostate size. Keong[21] confirmed that intra-prostatic protrusion (median lobe) is more important than prostate volume in causing obstruction. He added that the median lobe obstructs by distorting the Prostatic Urethra while the lateral lobes compress the urethra with lesser magnitude of obstruction.

This summary of the pathophysiology of clinical BPH may explain in part the controversial reports and results on the correlation between prostate volumes and IPSS with Qol in BPH patients. In our study, there was a weak positive correlation between prostate volume and IPSS that was statistically significant $r(89)=25$, $P<.05$, while there was no correlation between prostate volume and QOL $r(89)=08$, $P>.05$. Other studies also documented same findings,[8,9,13,15,17,22,23] yet many authors reported contrary findings of no correlation between the two variables.[3,12,16,24,25] This lack of homogeneity of reports across board suggests few facts of clinical interest to the clinician. Firstly, the prostate volume does not predict the severity of clinical symptoms and so should not be used in isolation to guide selection of patients for care (watchful waiting, medical or surgical treatments). Secondly, prostate volume alongside symptom severity and urodynamic studies (to rule out detrusor under-activity), can guide the choice of modalities of treatment (medical or surgical). Lastly, prostate volume in combination with symptom severity can guarantee choice of surgical techniques (minimal access or open).

CONCLUSION

This study finds a weak but positive correlation between prostate volume and IPSS which was also statistically significant in support of other studies done on this subject. However, there was no correlation between prostate volume and QoL. Other studies across the globe documents mixed reports. Correlation being weak, prostate volume alone should not be used to predict the degree of bladder outlet obstruction vis-a-vis severity of lower urinary tract symptoms and the degree of bother to patients.

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