

Prostate Volume and Urinary Discomforts in Elderly

Tomislav Tadin¹, Josip Španjol², Iva Muškardin³ and Željko Fučkar³

¹Ultrasound Diagnostic Service, Health Centre Rijeka, Rijeka, Croatia

²Department of Urology, University Hospital Centre Rijeka, Rijeka, Croatia

³Faculty of Medicine, University of Rijeka, Rijeka, Croatia

ABSTRACT

Occasional doubts about the real effect of the prostate volume on the urinary discomforts that elderly have been experiencing required additional assessment of these parameters. The aim of this study was to re-evaluate relationship between the urinary discomforts of the elderly and the prostate volume in comparison with age. Results of the group of 79 patients observed within one-year period were analyzed. In assessing their urinary discomforts the International Prostate Symptom Score (IPSS) was calculated, the ultrasound prostate volumetry was performed, and both of these parameters were compared with age. Statistical analysis of the results confirmed significant positive correlation between the prostate volume and age, positive correlation between IPSS and age, as well as between prostate volume and IPSS.

Key words: prostate volume, urinary discomforts, elderly, International Prostate Symptom Score

Introduction

Prostate volume has been repeatedly disputed by various studies regarding its correlation with urinary discomforts. In spite of studies confirming the positive correlation between the prostate volume and urinary discomforts in elderly^{1–4}, as well as between the prostate volume and age⁵, there are also studies suggesting that prostate volume might not be in positive correlation with urinary discomforts^{6–11}. These doubts about the real effect of the prostate volume on the urinary discomforts that elderly have been experiencing required additional assessment of these parameters regardless of the nature of the prostate change¹². The aim of this study was to re-evaluate relationship between the urinary discomforts of the elderly and the prostate volume in comparison with age.

Materials and Methods

Seventy-nine patients were observed within one-year period and their urinary discomforts, prostate volume and age were analysed. The ultrasound prostate volumetry was done mostly using transabdominal approach and sometimes transrectal one, as well. In assessing the urinary discomforts the International Prostate Symptom

Score (IPSS) was calculated (13). Finally, both of these parameters were compared with age. The study was carried out in full accordance with ethical standards applicable in both institutions.

Statistics

In this study the basic methods of descriptive statistical analysis, as well as the correlation analysis with Spearman coefficient were used. The statistical analysis was performed by an independent company, ID Consulting, Bribir, Croatia.

Results

The prostate volume, urinary discomforts and age of the group of 79 patients observed within one-year period are presented in Table 1.

The mean age of the examined group of patients was 67, their mean prostate volume was 39.3 cm³ and their mean IPSS was 5. The age distribution of patients is presented in Figure 1.

TABLE 1
AGE, PROSTATE VOLUME AND THE INTERNATIONAL PROSTATE SYMPTOM SCORE

	N	Arithmetic mean	Standard deviation	Median	Interquartile range
Age	79	67.37975	11.58946	67	58–77
Prostate volume	79	45.10253	24.38899	39.3	28.25–52.7
Score	79	6.35443	6.537933	5	1–9

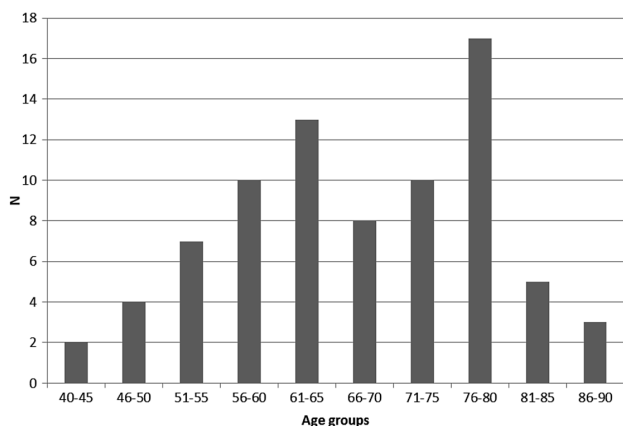


Fig. 1. Age distribution of patients per age groups.

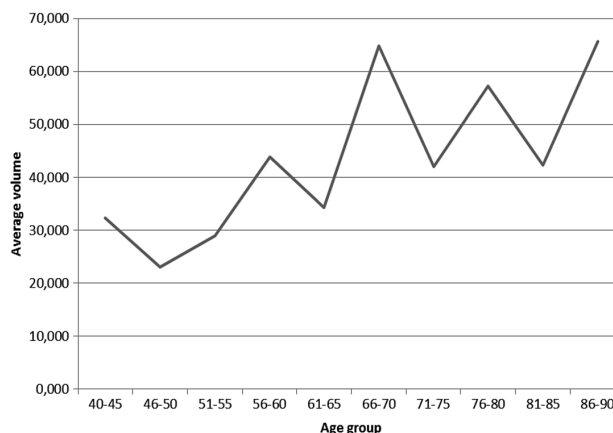


Fig. 2. The graph showing tendency of growth in relation to age also confirmed with correlation analysis. The average prostate volume in the 66–70 age group should be noted.

In the analysis of the correlation of prostate volume and IPSS with age the Spearman correlation coefficient was applied as presented in Table 2.

The above analysis shows moderately strong and statistically significant positive correlation of IPSS with both prostate volume and age, i.e. the increase of age is expected to be accompanied by increase of both the parameters. Descriptive analysis of the mean value of the prostate volume according to age groups is presented in Table 3 and Figure 2.

Descriptive analysis of the mean value of International Prostate Symptom Score according to age groups is presented in Table 4 and Figure 3.

In the analysis of the correlation between IPSS and the prostate volume the Spearman correlation coefficient was applied as presented in Table 5 and Figure 4.

The above results show strong and statistically significant positive correlation between IPSS and the prostate volume, i.e. the patients with bigger prostate volume are expected to have a higher IPSS.

TABLE 2
CORRELATION OF THE PROSTATE VOLUME AND THE INTERNATIONAL PROSTATE SYMPTOM SCORE WITH AGE

Variable	Spearman correlation	p	95%-confidence interval
Prostate volume	0.5060	<0.0001	[0.321–0.654]
Score	0.4470	<0.0001	[0.251–0.608]

TABLE 3
DESCRIPTIVE ANALYSIS OF THE MEAN VALUE OF THE PROSTATE VOLUME ACCORDING TO AGE GROUPS

Age group	Prostate volume									
	1	2	3	4	5	6	7	8	9	10
N	2	4	7	10	13	8	10	17	5	3
Arithmetic mean	32,300	23,050	28.98571	43.84	34.23846	64.8375	42.06	57.19412	42.3	65.6
Standard deviation	5.798276	3.307063	5.592682	22.76782	12.76588	45.8044	14.71365	18.51461	19.42421	40.35691

TABLE 4
DESCRIPTIVE ANALYSIS OF THE MEAN VALUE OF THE INTERNATIONAL PROSTATE SYMPTOM SCORE ACCORDING TO AGE GROUPS

Age group	Score									
	1	2	3	4	5	6	7	8	9	10
N	2	4	7	10	13	8	10	17	5	3
Arithmetic mean	2	1	3.714286	8.7	2.692308	6.25	6.6	8.117647	12	10.66667
Standard deviation	2.828427	2	4.990467	9.877584	2.358835	8.34523	5.316641	4.442442	7.582875	10.78579

TABLE 5
ANALYSIS OF CORRELATION BETWEEN THE INTERNATIONAL PROSTATE SYMPTOM SCORE AND THE PROSTATE VOLUME

Variable	Spearman correlation	p	95%-confidence interval
Score	0.615	<0.0001	[0.455–0.736]

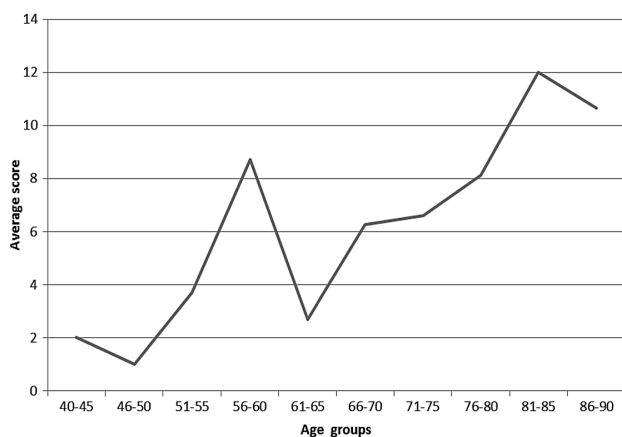


Fig. 3. The graph showing average International Prostate Symptom Score per age groups with tendency of growth in relation to age, also confirmed with correlation analysis. The International Prostate Symptom Score in the 56–65 age group should be noted.

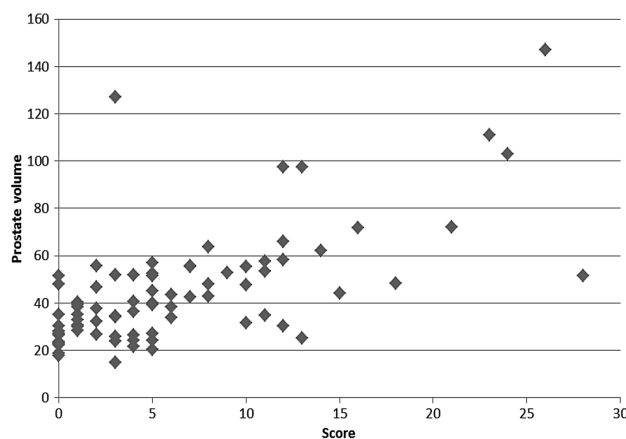


Fig. 4. Relationship between the International Prostate Symptom Score and the prostate volume.

Discussion

The aim of this study was to re-evaluate relationship between the urinary discomforts of the elderly and the prostate volume in comparison with age. Statistical analysis of the results of this re-evaluation confirmed moderately strong and statistically significant positive correlation of IPSS with both prostate volume and age. Similarly to the previously mentioned results^{1–5}, as well as those of Sciarra et al.¹⁴ and Vesely et al.¹⁵ the data emerging from this analysis also support the hypothesis that age is one

of the principal factors influencing the relationship between symptom score and prostate volume.

Conclusion

This study confirmed the notion that prostate volume, urinary discomforts in elderly and age were in mutual strong positive correlation. In other words both urinary discomforts and prostate volume are expected to increase with age.

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T. Tadin

*Dr. Zdravka Kučića 27, 51000 Rijeka, Croatia
e-mail: medicina_ri@inet.hr*

VOLUMEN PROSTATE I URINARNE TEGOBE U STARIJIH

SAŽETAK

Povremene dvojbe oko stvarnog učinka volumena prostate na urinarne tegobe koje imaju stariji zahtijevale su dodatnu procjenu ovih parametara. Cilj ovog istraživanja je reevaluacija odnosa između urinarnih tegoba starijih i volumena prostate u usporedbi s dobi. Analizirani su preliminarni rezultati skupine od 79 bolesnika praćenih tijekom jednogodišnjeg razdoblja. U procjenjivanju njihovih urinarnih tegoba izračunavan je skor Međunarodnog bodovnog sustava kod bolesti prostate (IPSS), učinjena je ultrazvučna volumetrija prostate i oba ova parametra uspoređivana su s dobi. Statistička analiza rezultata potvrdila je značajnu pozitivnu korelaciju između volumena prostate i dobi, pozitivnu korelaciju između IPSS-a i dobi, kao i između volumena prostate i IPSS-a.