



Changes In Prostate-Specific Antigen After Treatment In Men Over 50 Years With Lower Urinary Tract Symptoms: A Prospective Study

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Abstract

Background: Prostate-specific antigen (PSA) remains a central marker in the evaluation of prostate disorders, though its role in monitoring therapeutic response continues to be debated. This prospective study aimed to evaluate changes in PSA levels before and after treatment among men over 50 years presenting with lower urinary tract symptoms (LUTS).

Methods: A total of 100 men aged ≥ 50 years with LUTS were enrolled between July 2022 and December 2023. Baseline assessment included digital rectal examination, serum PSA estimation, transrectal ultrasonography, and uroflowmetry. Patients received either medical therapy (alpha-blockers, 5-alpha reductase inhibitors, antibiotics) or surgical interventions (transurethral resection of the prostate or orchidectomy). Post-treatment evaluations included PSA measurement, prostate size, and post-void residual urine. Statistical analysis was performed using paired t-test/Wilcoxon signed-rank test and chi-square test.

Results: Mean PSA levels declined significantly after treatment (12.7 \rightarrow 5.9 ng/mL; $p < 0.001$). The most pronounced reduction occurred in prostate cancer patients (69.1 \rightarrow 26.6 ng/mL; $p = 0.005$). Patients with benign prostatic hyperplasia and urinary tract infection also showed significant PSA decreases ($p < 0.001$). Improvements in prostate volume and residual urine paralleled PSA decline.

Conclusion: PSA levels significantly decreased following treatment, indicating potential value as a biomarker of therapeutic response in both benign and malignant prostate conditions. Nonetheless, clinical correlation remains essential due to PSA's lack of specificity.

Keywords: Prostate-specific antigen; Lower urinary tract symptoms; Benign prostatic hyperplasia; Prostate cancer; Treatment response

Introduction

Prostate-specific antigen (PSA) serves as a widely utilized biomarker in assessing prostate health. Elevated PSA levels may arise in benign prostatic hyperplasia (BPH), prostatitis, or prostate cancer, limiting its disease specificity. Lower urinary tract symptoms (LUTS) are highly prevalent among aging men and often trigger PSA evaluation. Understanding PSA behavior before and after therapy may enhance

assessment of treatment efficacy and guide further management. The present study aimed to analyze PSA changes in men above 50 years with LUTS undergoing either medical or surgical treatment.¹⁻³

Materials and Methods

This prospective comparative study was conducted between July 2022 and December 2023. Ethical

approval was obtained from the Institutional Ethics Committee, and written informed consent was taken from all participants.⁴ Men aged ≥ 50 years presenting with LUTS were included, while those with prior prostate cancer, ongoing treatment, or unwillingness to participate were excluded. All participants underwent history taking, digital rectal examination (DRE), serum PSA measurement, transrectal ultrasound for prostate volume estimation, and uroflowmetry with post-void residual urine assessment. Treatment included medical therapy (alpha-blockers, 5-alpha reductase inhibitors, antibiotics) or surgical intervention (TURP or orchidectomy). Post-treatment PSA levels, prostate size, and uroflowmetry parameters were re-evaluated at follow-up visits. Data were analyzed using SPSS; paired t-test or Wilcoxon signed-rank test for pre/post comparison, and chi-square for categorical variables. $p < 0.05$ was considered significant.⁵⁻⁶

Results

A total of 100 men aged 51–80 years were included, most in the 51–60-year group (46%). The commonest presenting symptoms were frequency (38%), urgency (25%), and straining (17%). Diagnoses comprised BPH (60%), UTI (26%), and prostate cancer (14%). Management involved medical therapy (58%), TURP (39%), and orchidectomy (3%). Mean PSA reduced from 12.7 ± 23.1 ng/mL pre-treatment to 5.9 ± 12.5 ng/mL post-treatment ($p < 0.001$). Subgroup analysis showed reductions in UTI (3.0→2.3 ng/mL), BPH (3.8→2.6 ng/mL), and prostate cancer (69.1→26.6 ng/mL).⁷⁻⁹ Prostate volume and post-void residual urine also improved significantly.

Discussion

This study confirms significant post-treatment PSA decline across both benign and malignant prostate conditions. The greatest reduction was seen in prostate cancer patients, consistent with prior findings following androgen deprivation or TURP.¹⁰⁻¹² BPH and infection-associated cases also showed PSA decrease, reflecting inflammation-related elevation.¹³⁻¹⁵ PSA, though non-specific, remains a useful adjunct for monitoring therapeutic outcomes when interpreted with clinical correlation.¹⁶⁻¹⁸ Elderly patients had higher baseline PSA due to larger prostate volumes. Limitations include single-center setting, small cancer subgroup, and limited follow-up.¹⁹⁻²⁰ Future multicentric, long-term studies may further

establish PSA trends as predictors of treatment efficacy.

Conclusion

PSA levels significantly decreased after treatment in men over 50 years with LUTS. PSA can be used as an adjunct marker for monitoring therapeutic response in both benign and malignant conditions, provided results are interpreted within the clinical context.²¹⁻²⁴

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