

Benign Prostate Hypertrophy: An Educational Ultrasound Images and Pharmacotherapy

Mini-Review

Aamir Al-Mosawi

Advisor Doctor and Expert Trainer, The National Center of Training and Development. Iraqi Ministry of Health, Baghdad, Iraq.

***Corresponding author**

Aamir Al-Mosawi,
Advisor doctor and expert trainer,
The National Center of Training and Development,
Iraqi Ministry of Health, Baghdad, Iraq.

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Abstract

Background: A benign increase in the size of prostate (Enlargement) can be asymptomatic, but it can cause symptoms resulting from pressure on the urethra, including frequency of urination, difficulty in starting urination, poor urine stream, dribbling after urination, and inability to pass urine. Ultrasonography has been used as early as 1971 for the diagnosis of prostatic enlargement.

Patients and Methods: The case of a 53-year old diabetic and hypertensive male who had refractory psoriasis and developed benign enlargement is described and an educational ultrasound images are presented.

Results: The patient was complaining of dribbling after micturition for few weeks. He was not having difficulty in starting urination nor complained of frequent micturition, and the urine stream was considered normal. The urinary bladder was normal, but with mild hazy wall outline. Pre-voiding volume was 248 ml, and post-voiding volume was 9 ml. Ultrasound of the prostate showed enlarged prostate with homogenous texture. Prostate volume was 36.6 ml (Normal: 25 ml). Therefore, Oral finasteride was started.

Conclusion: Many medications have been used in the treatment of benign enlargement of the prostate during the 1960s, 1970s, and 1980s, including progestational agents, Amino acids, spironolactone, candididin, nystatin, flutamide, bromocriptine, alpha-adrenergic blockers, *Serenoa repens* (Saw palmetto extracts), and mepartricin. However, the current evidence-based opinion suggests that benign enlargement of the prostate can be initially treated with medications that can reduce the volume of the prostate such as finasteride and dutasteride. Tamsulosin or alfuzosin can be added to further improve lower urinary symptoms.

Keywords: Benign enlargement of the prostate, Ultrasonography, evidenced-based treatment, expert opinion.

Introduction

A benign increase in the size of prostate (Enlargement) can be asymptomatic, but it can cause symptoms resulting from pressure on the urethra, including frequency of urination, difficulty in starting urination, poor urine stream, dribbling after urination, and inability to pass urine. Ultrasonography has been used as early as 1971 for the diagnosis of prostatic enlargement [1, 2, 3].

Patients and Methods

The case of a 53-year old diabetic and hypertensive male who had refractory psoriasis and developed benign enlargement of the prostate is described, and an educational ultrasound images are presented. The treatment of his diabetes, hypertension, and psoriasis was described in two previous publications [4, 5].

Results

The patient was complaining of dribbling after micturition for few weeks. He was not having difficulty in starting urination nor complained of frequent micturition, and the urine stream was considered normal. There was no evidence of urinary tract infection, however renal ultrasound showed simple renal cyst on the left kidney, 23 mm in diameter. Both kidneys were otherwise normal.

The urinary bladder was normal, but with mild hazy wall outline. Pre-voiding volume was 248 ml, and post-voiding volume was 9 ml.

Ultrasound of the prostate (Figure-1) showed enlarged prostate with homogenous texture, and no space occupying lesion. Prostate volume was 36.6 ml (Normal: 25 ml). Therefore, Oral

finasteride was started.

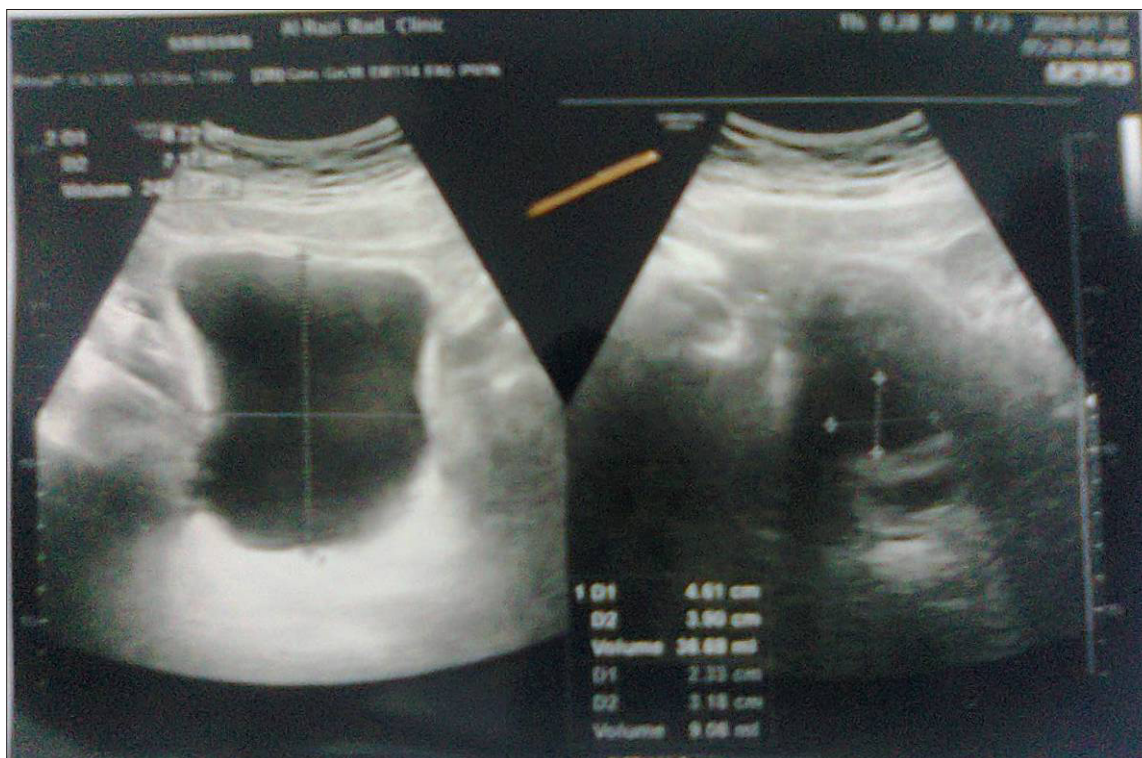


Figure 1A: Ultrasound of the prostate showed enlarged prostate

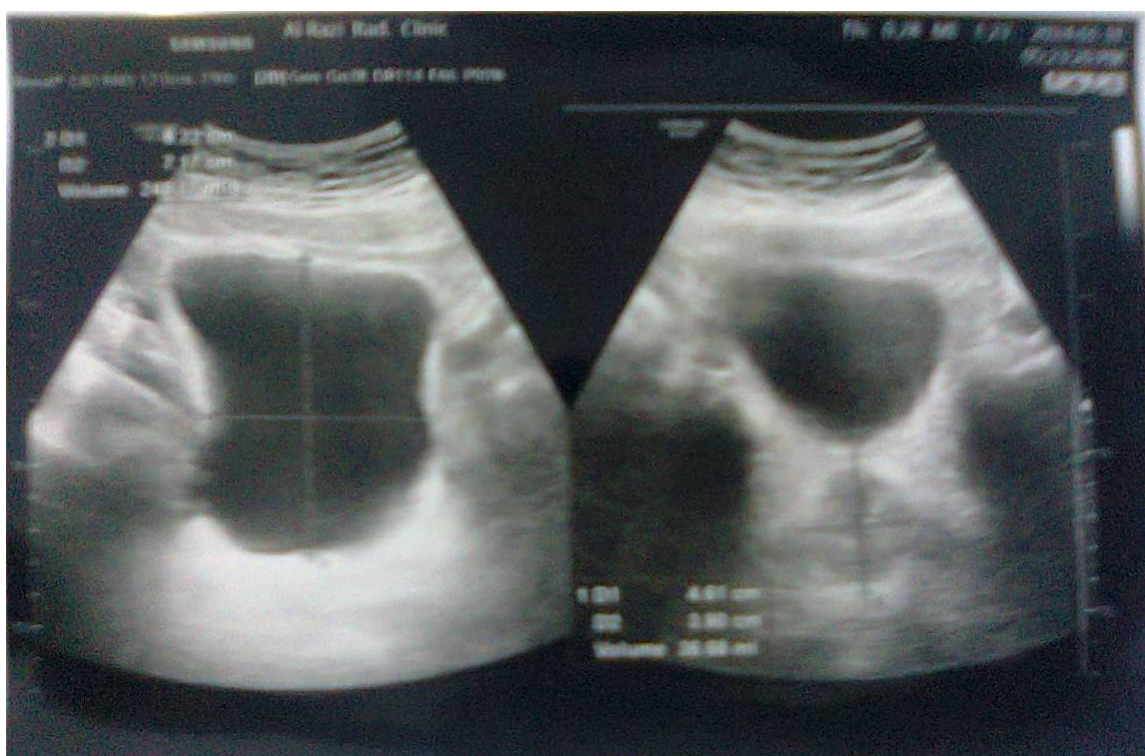


Figure 1B: Ultrasound of the prostate showed enlarged prostate

Discussion

Ultrasonography has been used as early as 1971 for the diagnosis of prostatic enlargement [1, 2, 3]. In 1990, Fehr and Knönagel emphasized the importance of ultrasound of prostate in the assessment of medical treatment. They suggested that a reduction in prostate volume after medical treatment can be considered significant when the reduction is 15% or more [3].

Many medications have been used in the treatment of benign enlargement of the prostate during the 1960s, 1970s, and 1980s, including progestational agents, Amino acids, spironolactone, candicidin, nystatin, flutamide, bromocriptine, alpha-adrenergic blockers, *Serenoa repens* (Saw palmetto extracts), and mepartricin [6-15].

Finasteride, a 5 alpha-reductase inhibitor has been increasingly used in treatment of benign enlargement of the prostate since the early 1990s [16].

In 1990, Stoner emphasized that oral finasteride can considerably reduce the elevated level of dihydrotestosterone in the prostate which is the main androgen responsible for prostate enlargement without decreasing testosterone levels. Stoner reviewed the literature and found that finasteride can reduce the volume of prostate by 28% over six months, and without important adverse effects [16].

In 1998, Roehrborn from the United States conducted a meta-analytic study which included six placebo-controlled studies that included patients with benign hypertrophy patients treated with either 5 mg oral finasteride for at least one year or placebo.

The meta-analysis showed that finasteride treatment was associated with symptomatic improvement and improved urinary flow rate, and it was effective in patients with larger prostates [17].

In 1996, Chapple et al from the United Kingdom conducted a meta-analytic study which included two placebo-controlled studies that included patients with benign hypertrophy of the prostate. 382 patients with treated with 0.4 mg modified-release tamsulosin (The first prostate-selective alpha 1A-adrenoceptor blocker) one time daily for 12 weeks, and 193 patients who received placebo.

The meta-analysis showed that tamsulosin treatment was safe and was well-tolerated. Tamsulosin treatment was associated with symptomatic improvement and improved urinary flow rate. Treatment was not associated with important changes in blood pressure or pulse rate in hypertensive and non-hypertensive patients [18].

In 1998, Wilt et al from the United States conduct a systematic review which included 18 controlled studies involving 2939 patients with benign hypertrophy of the prostate. Wilt et al found that when compared with finasteride, *Serenoa repens* (Saw palmetto extracts) can result in similar improvement in urinary flow and urinary tract symptoms. *Serenoa repens* was associated with less adverse effects [19].

In 1999, Djavan and Marberger conducted meta-analysis which included patients with benign hypertrophy of the prostate associated with obstructive symptoms. They found that alpha-1-adrenoceptor blockers had similar beneficial effects in improving symptoms and flow. However, alfuzosin and tamsulosin were better tolerated than doxazosin, terazosin

and prazosin, and tamsulosin had less effect hypotensive effect than alfuzosin particularly in older patients [20].

In 2004, Boyle et al from Italy reported an updated meta-analysis which included 17 placebo-controlled studies involving 4280 patients with benign hypertrophy of the prostate. The meta-analysis showed that treatment with *Serenoa repens* extract was associated with symptomatic improvement, marked reduction in nocturia and improved peak urine flow [21].

In 2014, Park and Choi from the United States reported a systematic review and meta-analysis which showed that dutasteride, an other 5 α -reductase inhibitor had a beneficial effect in benign prostate enlargement similar to that of finasteride, and both were associated with a similar rate of adverse effects [22].

In 2016, Kosilov et al from Russia which included 338 patients with benign prostate enlargement who have significant symptoms of overactive bladder with dribbling. Patients were treated with solifenacin 5 mg plus tospium 5 mg (Antimuscarinic medications) plus tamsulosin 0.4 mg daily or tamsulosin 0.4 mg (Control patients). The addition of antimuscarinic medications to tamsulosin improved symptoms of overactive bladder and was considered safe [23].

Conclusion

The current evidence-based opinion suggests that benign enlargement of the prostate can be initially treated with medications that can reduce the volume of the prostate such as finasteride and dutasteride. Tamsulosin or alfuzosin can be added to further improve lower urinary symptoms.

Conflict of Interest

None.

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