PSNet
PATIENT SAFETY NETWORK

Renal Failure Due to Benign Prostatic Hyperplasia

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The Case

A 65-year-old man was referred to urology for a 5-year history of progressive urinary frequency, nocturnal urination, and difficulty initiating a stream, which had worsened considerably in the past month. In the 1990s, his father had undergone TURP (transurethral resection of the prostate) surgery that resulted in "miserable incontinence and impotence" for the remainder of his life. His father's experiences made the patient reluctant to seek care for his own symptoms lest he require surgery and develop similar complications.

At his first visit to the urologist's office, the patient was seen by a physician assistant who inquired about prior prostate specific antigen (PSA) results. According to the patient, when he answered that he had never had PSA testing, he was berated for not having obtained what the physician assistant stated was an important and essential test. The patient, who was a research scientist, explained that he had reviewed the literature and most recent recommendations, which suggested that the risks of testing outweighed its benefits. The patient felt that the physician assistant seemed both unaware of these controversies as well as dismissive of his choice.

Later in the visit, an in-office bladder scan read 999 mL, the upper limit of detection for the machine. A subsequent scan after voiding was 500 mL. Despite the patient's expressed views on PSA testing, the physician assistant proceeded to order laboratory work including a PSA test, scheduled a cystoscopy, and urged the patient to self-catheterize should his symptoms worsen (without any instructions or demonstration). Because of this negative interaction and resulting mistrust of the provider, the patient elected not to follow up with laboratory work and canceled his scheduled cystoscopy, as he felt that no one had adequately explained to him why it was needed. The urology physician assistant also prescribed tamsulosin (an alpha-blocker), but the patient quickly discontinued the drug after experiencing severe lightheadedness.

Ten weeks after the initial visit at the urologist's office, the patient began to feel progressively "woozy, headache-y, and dizzy," but without acute changes in urinary symptoms. He saw a nurse practitioner at his primary care physician's office, who felt he looked urgently ill and found his blood pressure to be dangerous

elevated (230/170 mm Hg). She directed him to the nearest emergency department, where his creatinine was found to be markedly elevated at 14.9 mg/dL (normal range 0.6–1.2 mg/dL). A urinary catheter was inserted, with 2 L of urine immediately drained.

He was admitted to the hospital for the next 6 days, during which his renal function gradually improved. His creatinine came down to 4.3 mg/dL. He was discharged home with an indwelling urinary catheter and a follow-up appointment with the same urologist's office where he had first presented.

At that follow-up appointment, he was told he was "ready for surgery"—despite his fears of potentially developing a bad outcome based on his father's experience—and was told that the department would be in touch to schedule a TURP. He never received a call back, however, and having decided he would have nothing further to do with that urology office, he instead contacted a urologist at another hospital. Several months later, the patient underwent a TURP without complications and eventually was able to have the catheter removed with return of normal voiding. His renal function also slowly improved; however, 1 year later it remained abnormal with a creatinine of 2.0 mg/dL.

The Commentary

by Michael J. Barry, MD, and Marc B. Garnick, MD

Lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH) occur in more than half of men older than 50. These LUTS include those that this patient experienced: slowly progressive urinary frequency, nocturia (*storage symptoms*, which can also include urgency), and difficulty in starting the urinary stream (*voiding* symptoms, which can also include a weak stream, intermittency, and incomplete emptying).(1) These symptoms had been chronic, but acutely worsened in the past month for this patient. More serious complications of BPH include acute urinary retention and, in the case under discussion, obstructive uropathy with renal failure due to bladder outlet obstruction. Men with acute or chronic urinary retention usually have evidence of bladder decompensation including a large postvoid residual volume, which can also predispose to infection and bladder stones.

Renal failure due to obstructive uropathy is infrequent. In a Veterans Affairs randomized trial of transurethral prostatectomy (TURP) versus watchful waiting, men with moderate symptoms attributed to BPH were randomized even with postvoid residual volumes up to 350 mL. More than 3 years of follow-up, 3/280 men developed renal decompensation in the surgery group, versus 1/276 in the watchful waiting group.(2) In another trial, more than 3000 men were randomized to an alpha-blocker, a 5-alpha reductase inhibitor (5-ARI), combination therapy, or placebo. After 4.5 years of follow-up, not a single man in any study arm developed renal failure related to BPH.(3) Given these data, the American Urological Association (AUA) guideline on management of BPH states, "The routine measurement of serum creatinine levels is not indicated in the initial evaluation of men with LUTS secondary to BPH."(4)

Nevertheless, maintaining a high index of suspicion for chronic urinary retention and renal failure is prudent, as this case illustrates. The history of abrupt worsening of symptoms is atypical for BPH and should raise suspicion that the patient may be headed toward urinary retention. The finding of a 500 mL postvoid residual volume was also a red flag that should have prompted a creatinine measurement.

Instead of responding to the problem that brought the patient in, the clinician berated him for not having had a PSA test, recommended urinary self-catheterization without instruction, and prescribed an alpha-blocker with apparently no advice about potential adverse effects. Perhaps a creatinine test was ordered but not done by the patient because of an accompanying unwanted PSA test. Rechecking the postvoid residual volume after a trial of the alpha-blocker would have been reasonable and more important than a cystoscopy. While cystoscopic findings may help with operative planning, they are not good predictors of obstruction and are generally not recommended when the initial evaluation suggests bladder outlet obstruction.(1) Self-catheterization is an option for chronic urinary retention, but generally after further evaluation than was the case here, and only with careful instruction.

What other evaluations might have been helpful initially? An AUA symptom score could help objectively quantify symptoms and serve as a basis for judging future worsening or improvement.(5) A digital rectal examination could have demonstrated a symmetrically enlarged, firm (like the tip of the nose) prostate—helping confirm the diagnosis of BPH—but also asymmetry, induration, or nodularity that could suggest prostate cancer as another possible diagnosis. A urinalysis would have been helpful to assess for the presence of infection or hematuria.(1,4)

As this patient was seen in a urology office, a bladder scanner to measure postvoid residual volume noninvasively was available. An additional test that might have been done in this setting would have been a uroflow rate; peak urinary flow rates greater than 15 mL/sec make bladder outlet obstruction less likely. Before surgical interventions, simultaneous measurement of bladder pressure and urine flow (a urodynamics study) is the gold standard for documenting obstruction, but generally this would not be done at a first visit.

For the primary care physician without access to a bladder scanner, a more cumbersome method is to order a transabdominal ultrasound with bladder volume estimates before and after voiding. The ultrasound can also evaluate for hydronephrosis and more objectively estimate prostate size.

Although other medical options are available (6,7), the decision to prescribe an alpha-blocker for LUTS attributed to BPH was reasonable, albeit with a better explanation of the expected therapeutic and potential adverse effects. In men with enlarged prostates, combining an alpha-blocker with a 5-ARI is associated with greater improvement in symptoms and a reduced risk of progression to acute retention or surgery. However, 5-ARIs work slowly in comparison to alpha-blockers and would likely not have altered the patient's short-term progression to chronic retention.

A PSA test is often ordered in this clinical situation but should not be performed without discussing the risks and benefits with the patient. First, although BPH and prostate cancer can coexist, typical symptoms of LUTS do not increase the likelihood a man has prostate cancer.(8) The AUA and US Preventive Services Task Force guidelines on early detection of prostate cancer recommend a shared decision-making approach to PSA screening for men age 55–69 (9,10), and this man was clearly disinclined. Prostate specific antigen levels also may be helpful in the management of BPH; PSA can provide a rough estimation of prostate size (11), and men with higher PSA levels benefit more from 5-ARIs.(12) Moreover, PSA levels decrease about 50% on a 5-ARI, and a subsequent increase in an adherent patient may warn of progression of a cancer. However, if a PSA test is done for BPH management and the result is elevated, a

man may be pressured into an undesired biopsy given concerns about prostate cancer.

Over the ensuing 10 weeks, the patient, distrustful of the clinician he encountered, canceled his follow-up with subsequent progressive chronic urinary retention, obstructive uropathy with renal failure, and life-threatening hypertension. His bladder became grossly distended and drained 2 L with catheterization. While his renal function has partially recovered after TURP, his bladder and renal damage may not be entirely reversible.

In addition to the errors of communication and education already mentioned, the patient's concerns about his father's poor outcome after a TURP could have been better addressed. Erectile dysfunction and incontinence are uncommon after a TURP, while retrograde ejaculation is common, and it is even possible the patient misunderstood the actual condition or procedure that his father had. A host of newer surgical options are now available to treat LUTS attributed to BPH if medications don't work (13), giving patients many more options than were available in the 1990s. A shared decision-making process between clinician and patient can start in the diagnostic phase when a man presents with LUTS, and continue once the diagnosis is established and treatments are being considered. The AUA guideline on BPH emphasizes shared decision-making and a focus on how symptoms affect patients as important approaches for optimal management.(4)

Take-Home Points

- A basic evaluation for an older man with lower urinary tract symptoms suspected to be due to benign prostatic hyperplasia should include an American Urological Association symptom score, digital rectal exam, and urinalysis.
- Men with rapidly worsening lower urinary tract symptoms attributed to benign prostatic hyperplasia should have a creatinine measurement to rule out renal insufficiency due to bladder outlet obstruction. In addition, a postvoid residual volume should be measured using a bladder scanner or transabdominal ultrasound. Significant postvoid residual volumes (>350 mL or so) should be confirmed and urological consultation strongly considered.
- As is true for most medical problems, steps in the diagnosis and management of the condition should be thoroughly discussed with the patient.

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