

## DIAGNOSTIC APPROACH TO PROSTATE DISEASE

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## ABSTRACT

The main afflictions of the prostate gland include prostatitis, benign prostatic hyperplasia (BPH) and prostate cancer. Symptoms and signs frequently overlap and it may be difficult to distinguish one from the other. Careful history taking, followed by complete physical examination and directed basic investigations will reveal the underlying pathology.

## SYMPTOMS AND SIGNS

Patients with prostate disease often present with lower urinary tract symptoms (LUTS). BPH and prostate cancer rarely occur before the age of 50 years. **Obstructive symptoms** from bladder outlet obstruction from BPH or prostate cancer (usually already locally advanced if causing obstruction) include hesitancy, poor stream and intermittency. **Irritative symptoms** such as frequency, nocturia and urgency may supervene after a long-standing obstruction. The normal adult voids five or six times a day, with a volume of approximately 300 mls each void.

Patients may have symptoms due to complications of bladder outlet obstruction. They may present with acute retention of urine, typically after an exacerbation of symptoms from constipation, ingestion of anticholinergics (commonly cough mixture) and diuresis from alcohol intake. They may also have chronic retention of urine, as manifest by urinary incontinence from overflow and symptoms of uraemia due to subsequent reflux and hydronephrosis. Significant bladder outlet obstruction with high residual urine also predisposes to recurrent lower urinary tract infection, where patients present with dysuria, fever and lower abdominal discomfort. Less commonly they may present with painless gross hematuria due to an enlarged vascular prostate.

Although better patient and physician awareness of prostate cancer has led to a lower proportion of men presenting with metastatic prostate cancer over the last decade, it is important to exclude prostate cancer in men over the age of 50 years who present with persistent bone pain. Pain from bony metastatic disease is typically unremitting with rest and worse at night.

Prostatitis affects both young and older adults. Patients with prostatitis may present acutely with fever, dysuria and pain of prostatic origin (poorly localized, lower abdominal, inguinal, perineal, lumbosacral and/or rectal pain).

Otherwise, they may have chronic prostatitis (> 90% of the time). Onset may be more insidious without fever and dysuria. The primary feature of these patients is pain of prostatic origin, and diagnosis is mainly by exclusion. In the younger age group, prostatitis is often related to sexual intercourse. While in the older age group, prostatitis is frequently a result of contiguous spread from the lower urinary tract due to bladder outlet obstruction.

Physical examination first involves an assessment of the vitals signs. Blood pressure measurement is important if patients are to be started on alpha-blocker treatment for BPH, which can cause postural hypotension. Measurement of an elevated body temperature may point to an infective cause.

During abdominal examination the finding of a palpable bladder after micturition suggests chronic retention. Examination of the hernial orifices may reveal the presence of hernia as a result of chronic straining during micturition. Examination of the external genitalia may show up abnormalities of the penis, epididymis or testes. Finally digital rectal examination (DRE) may reveal a smooth, globular and firm prostate indicating BPH, or an irregular and hard prostate suggesting prostate cancer. A tender, boggy prostate suggests prostatitis. It is also useful to note the anal tone during a DRE, as a lax anal tone with new onset LUTS may suggest cauda equina syndrome or spinal cord compression.

## DIFFERENTIAL DIAGNOSIS

Apart from the three conditions mentioned above, men who present with LUTS may be suffering from other conditions. These can be classified as (i) other diseases of the genitourinary tract, or (ii) systemic diseases with symptoms related to the lower urinary tract.

Other conditions of the genitourinary tract that need to be considered include:

- κ Lower urinary tract infection
- κ Neuropathic bladder due to diabetes, Parkinson's disease, or previous cerebrovascular accident
- κ Detrusor instability
- κ Detrusor failure
- κ Urethral stricture

Systemic diseases that may present with voiding symptoms include diabetes mellitus, which may cause frequency and nocturia secondary to glycosuric polyuria. Congestive cardiac failure (CCF) and diuretics used in its treatment can cause nocturia as well as frequency. 'Nocturia' maybe the initial complaint for patients with obstructive sleep apnoea or insomnia secondary to depression, for these two conditions cause patients to wake up frequently and subsequently feel the need to void. Neurological conditions such as herpes zoster and cauda equina

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syndrome may present with urinary retention. Frequent painless micturition and less commonly urgency in an immunosuppressed may be caused by genitourinary tuberculosis.

#### DIFFERENTIATING BPH FROM PROSTATE CANCER

BPH and locally advanced prostate cancer can both cause bladder outlet obstruction. As such it will be difficult to differentiate between the two just from symptoms alone. They both occur in the older age group, with both conditions being rare under the age of 50. A digital rectal examination and a serum prostate specific antigen level (PSA) test will then be helpful in differentiating between the two.

It is to be noted that patients with early prostate cancer are asymptomatic and digital rectal examination of these patients is likely to be unremarkable. The only indication of the presence of prostate cancer may be elevation of the serum (PSA) of > 4 ng/ml (see below). Having said that, cost-benefit analysis does not currently favour population-based screening of prostate cancer by serum PSA measurement in Singaporean males over the age of 50. Hence opportunistic screening of at risk patients by astute physicians is important. Those considered to be at higher risk of prostate cancer if they are above 50 years old and have positive family history (first degree relative having prostate cancer below the age of 60 years), LUTS or abnormal digital rectal examination.

Patients with an elevated serum PSA and/or abnormal digital rectal examination should then undergo transrectal ultrasound with biopsy.

#### INVESTIGATIONS OF PROSTATE DISEASES

**Urine analysis (UFEME/dipstick)** – to detect haematuria, pyuria, glycosuria

**Urine culture and sensitivity** – if urine analysis shows pyuria or clinical suspicion of UTI

**IPSS** – to assess severity and degree of bother of the patient's symptoms using the International Prostate Symptom Score (I-PSSS) and the Quality of Life (QOL) index (see insert). The higher the score, the more severe the patient's symptoms are and the more bothersome to the patient.

**Voiding diary (Frequency-volume chart)** – may be useful in patients with mainly irritative symptoms. Look out for fluid imbalance from congestive cardiac failure or chronic renal failure (nocturnal polyuria due to increased venous return during recumbency), anxiety disorders (frequency but no nocturia), polydipsia.

**Serum PSA** – the normal value is 0-4.0 ng/ml. Between 4.0 to 20 ng/ml there is a 20-30% risk of prostate cancer and above 20 ng/ml the risk is 70%.

**Uroflowmetry** – Objective test for degree of urine flow impairment. A minimum requirement of 150 mls of voided urine is required. A maximum flow rate of less than 15 mls per sec indicates mild obstruction, whereas less than 10 mls per sec indicates significant obstruction.

**Transabdominal ultrasound** – useful to measure residual urine (>100mls considered significant), prostate size, degree of intravesical prostatic protrusion.

**Ultrasound kidneys** – In patients with chronic retention or hematuria to detect for hydronephrosis or renal masses.

**KUB** – to exclude bladder calculus.

**Transrectal ultrasound with biopsy** – Ultrasound is indicated if serum PSA is elevated and/or abnormal digital rectal examination. The biopsy will reveal if the patient has prostate cancer.

**Urodynamic study (UDS)** – Recommended if not certain whether voiding dysfunction is due to bladder outlet obstruction or neuropathic bladder. The other indication is for patients with bothersome symptoms but no clinical or ultrasound evidence of obstruction (small prostate with no intravesical prostatic protrusion, good urine flow rate).

**Flexible cystoscopy** – for patients with previous lower urinary tract surgery (which may show urethral stricture or bladder neck stenosis), hematuria.

#### RECOMMENDED READING

MOH Clinical Practice Guidelines 1/2005 – Lower Urinary Tract Symptoms Suggestive of BPH

#### LEARNING POINTS

- o Lower urinary tract symptoms (LUTS) are very common in the ageing male.
- o Surgical intervention is required only in select cases and frequently the patient needs only reassurance and observation.
- o However, in a small proportion of patients with LUTS, the underlying pathology can be sinister. Careful history, complete physical examination and directed investigations will reveal the underlying pathology.

International Prostate Symptom Score (I-PSS)

Circle your score for each below

Over the past month, how often:	Not at all at all	Less than 1 time in 5	Less than half the time	About half the time	More than half the time	Almost always
Incomplete emptying Have you had a sensation of not emptying your bladder completely after you finish urination?	0	1	2	3	4	5
Frequency Have you had to urinate again less than 2 hours after you finished urinating?	0	1	2	3	4	5
Intermittency Have you found out that you stopped and started again several times when you urinate?	0	1	2	3	4	5
Urgency Have you found it difficult to postpone urination?	0	1	2	3	4	5
Weak stream Have you had a weak urinary stream?	0	1	2	3	4	5
Straining Have you had to push or strain to begin urination?	0	1	2	3	4	5
Nocturia Did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	0	1	2	3	4	5

Total Symptoms Score (Sum of Q1-Q7) =

Quality of life assessment	Delighted	Pleased	Mostly satisfied	Mixed	Mostly dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6