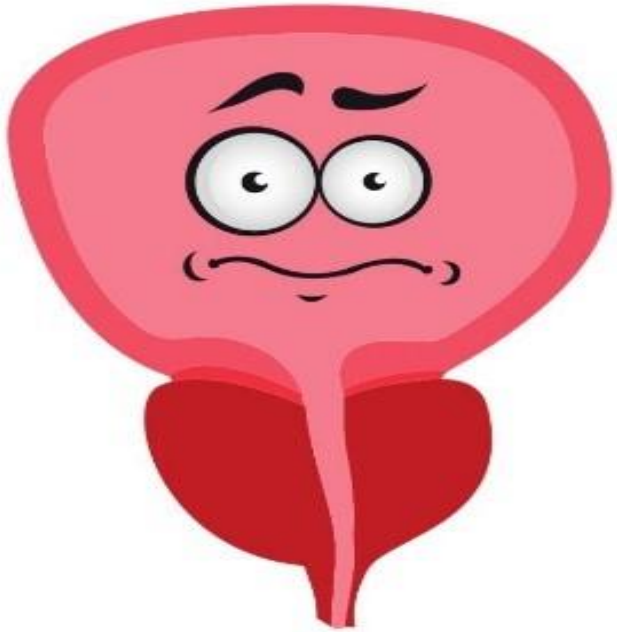
Prostate cancer



Anatomy of the prostate

Three glandular zones:

- Peripheral (70%) - most prone to carcinoma formation.
- Central (25%) - most prone to BPH
- Transitional (5%) - most prone to BPH

Blood supply:

- Arterial supply is triple- mainly inferior vesical, some from inferiorrectal and internal pudendal
- Venous drainage- extensive plexus beneath capsule

Innervation:

- Autonomic- extensive from inferior hypogastric plexus as a capsular plexus supplying prostate, seminal vesicles, and urethra,
- Somatic- from pudendal nerve (S2, 3, 4) to supply external urethral sphincter

Prostate cancer

- Most common malignant tumour in men over the age of 65 years
- Peak incidence in eighth decade
- 40% of cases present with early disease
- 20% of cases have metastases at presentation
- 25% of patients – 50-65years age
- 70% of patients - >80 years of age

Clinical features

- **May be asymptomatic**
- **Locally advanced disease**

Lower urinary tract symptoms

Urinary retention – Acute and chronic

Haematuria

Perineal pain, loin pain

Impotence

Haematospermia

- **Metastatic disease**

Bone pain

Renal failure

Anemia

Leg swelling

Paraplegia

Pathological fractures

Proptosis

Malaise

Pancytopenia

Rectal examination

- Enlarge prostate
- Detect nodules within the prostate and advanced disease
- Irregular induration
- Stony hard in part or in the whole of the gland
- Extension beyond the capsule up into the bladder base and vesicles
- Obliteration of the median sulcus
- Fixed overlying mucosa

Spread

Local spread

- seminal vesicles, bladder neck and trigone

later

- Involve the distal sphincter mechanism
- Obstructs the lower end of one or both ureters, obstruction of both resulting in anuria
- The rectum may become stenosed by tumour infiltrating around it (rare)

Spread by the bloodstream

- Bone - prostate is the most common site of origin for skeletal metastases

Pelvic bones , lower lumbar vertebrae , femoral head, rib cage , skull

- Breast
- Kidney
- bronchus
- thyroid gland

Lymphatic spread

1. Via lymphatic vessels passing to the obturator fossa or along the sides of the rectum to the lymph nodes beside the internal iliac vein and in the hollow of the sacrum
2. Lymphatics that pass over the seminal vesicles and follow the vas deferens for a short distance to drain into the external iliac lymph nodes

- From retroperitoneal lymph nodes, the mediastinal nodes and occasionally the supraclavicular nodes may become implicated

Investigations

Serum PSA –

- Used as a screening test
- High sensitivity
- Low specificity
- Elevated age-specific levels are an indication to consider prostate biopsy

Transrectal ultrasound (TRUS)

- detailed imaging of the prostate
- Systematic needle biopsy is performed guided by the ultrasound images with antibiotic prophylaxis

Pelvic MRI -Used to detect the presence of extracapsular extension or the presence of pelvic lymphadenopathy

Laparoscopic node biopsy - May be performed to sample enlarged nodes prior to considering radical treatment.

- **Isotope bone scan** - Will detect the presence of bone metastases
- **General blood tests**

Full blood count - leucoerythroblastic anaemia, thrombocytopenia

- **Liver function tests**

Treatment

Localized disease (confined to prostate)

❖**Patients with a life expectancy of <10y**

- Active monitoring with treatment deferred until there is evidence of disease progression (rising serum PSA)
- Hormonal therapy or Alpha-blocker - for troublesome LUTS
- TURP - for severe symptoms with features of obstruction

❖**Life expectancy of >10y**

- Counselled in detail about radical treatment aimed at cure
- The options are as follows:

✓Radical prostatectomy - Operation to remove the prostate and seminal vesicles

Complications include incontinence (severe in 3%) and erectile dysfunction(40–50% of cases)

✓External beam radiotherapy - 4–5-week period

Complications include cystitis, proctitis, and ED

Radical prostatectomy

- Should be carried out only in men with a life expectancy of >10 years
- For localised disease
- Removal of the prostate down to the distal sphincter and seminal vesicles
- Bladder neck is reconstituted and anastomosed to the urethra
- Complications

High incidence of impotence

low incidence of severe stress incontinence

Radical radiotherapy for early prostate cancer

- External beam radiotherapy (EBRT)
- Administered in fields that conform to the contours of the prostate
- More effective with a period of neoadjuvant and adjuvant androgen ablation
- complications

✓Irritation of the bladder with urinary frequency, urgency and sometimes urge incontinence

✓Rectum with diarrhea and, occasionally, late radiation proctitis

Metastatic disease

- Androgen ablation treatment

1. Medical castration
2. Orchidectomy

Reduce testosterone levels

- Addition of an anti-androgen provides a secondary response in some cases of PSA relapse
- Pain from bone metastases usually responds to radiotherapy

Androgen ablation treatment

Orchidectomy

- Performed in advanced disease
- Bilateral orchidectomy, whether total or subcapsular, will eliminate the major source of testosterone production

Medical castration

- LHRH agonists

May be given by monthly, 3-monthly or 6-monthly depot injection

- Block the androgen receptor

Cyproterone, Flutamide, Bicalutamide

Hormone-resistant disease

- All prostate cancers will eventually become hormone-resistant
- Chemotherapy is appropriate for patients who have a good performance status
- Palliative radiotherapy and bisphosphonates are used for bony metastases

Prognosis

- Localized prostate cancer - Excellent prognosis with 70–90% 10y disease-specific survival rate
- Locally advanced, non-metastatic disease - Median survival of 7y
- Metastatic disease - Median survival of 2–3y
- Once the state of hormone-resistant disease - Median survival is 6–12 months