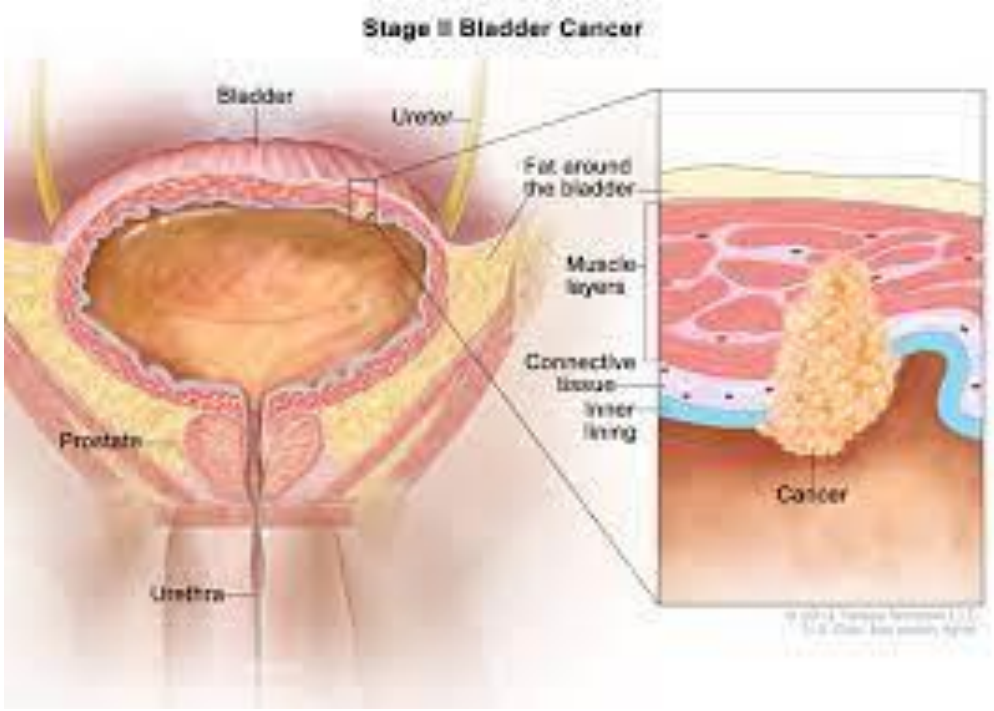
Bladder Tumours



Bladder tumour

- 95% of **primary bladder tumours** originate in transitional epithelium
- Remainder arise from,
  - Adenocarcinoma
  - Squamous cell carcinoma
  - Connective tissue (angioma, myoma, fibroma and sarcoma)
  - Extra-adrenal phaeochromocytomas

Secondary tumours from

- Sigmoid colon
- Rectum
- Prostate
- Uterus or the ovaries
- Bronchial neoplasms - rarely

Benign papillary tumours

- Papilloma consists of a single frond with a central vascular core with villi
- Inverted papilloma is a condition in which the proliferative cells penetrate under normal mucosa
- So that the lesion is covered with smooth urothelium
- Representing 1%-4% of bladder tumors
- Tend to occur in younger patients and may be seen in children

Carcinoma of the bladder

1. Urothelial cell carcinoma
2. Squamous cell carcinoma
3. Adenocarcinoma
4. Mixed - as a result of metaplasia in a transitional cell carcinoma

- 90% are urothelial in origin
- Pure squamous carcinoma is uncommon
- Primary adenocarcinoma - 1–2% of cases

Transitional cell tumours

- Spectrum of disease
- Benign superficial ‘papilliferous’ growths
- Frankly invasive transitional cell carcinoma (TCC)
- Transitional cell tumours (TCT) may affect any part of the urinary epithelium (renal pelvis, ureter, bladder, or very rarely, urethra)
- Majority (70%) are superficial in nature at diagnosis, being confined to the mucosa

Transitional cell carcinoma (TCC)

- The fourth most common non-dermatological malignancy in men
- Male:Female ratio 3:1
- Strongly associated with smoking and chemical exposure in western societies
- Strongly associated with Schistosoma haematobium infection (bilharzial bladder cancer)
- Reducing in incidence in countries where smoking is decreasing

Clinical features

- Majority of cases present with painless haematuria
- Painful micturition
- Renal colic due to blood clot
- Disturbance of urinary stream
- Retention of urine
- Constant pain in the pelvis - extravesical spread
- Pain in the loin or pyelonephritis - ureteric obstruction and hydronephrosis
- Pain that is referred to the suprapubic region, groins, perineum, anus and into the thighs - nerve involvement

Diagnosis

Urine cytology

- Malignant cells – TCC or carcinoma in situ will probably be present

Cystoscopy

- Fibre optic flexible cystoscope
- With local anesthetic gel
- Images the bladder and urethra
- Suspect lesions usually require transurethral resection under GA for diagnosis

Transurethral resection

- Rigid endoresectoscope under GA
- Permits resection of all or part of the tumour using a diathermy ‘loop’, with the tumour resected piecemeal
- Pathological examination will determine the histological grade and the pathological stage
- Following resection, bimanual examination - a residual mass is present or not

Upper tract imaging

- Identify and assess pelviureteric tumours
- IVU or ultrasound scan
- Ultrasound scan - examination of the renal cortex, detect tumours of 1cm diameter in the pelvicalyceal system, ureter, and bladder.
- Bladder tumour - filling defect in the cystogram phase

Local staging MRI and CT scanning

- Detect local or systemic spread

- Depth of invasion (T) from the tumour–node–metastasis (TNM) classification and grade are important factors in planning treatment and determining prognosis

Non-muscle-invasive

- Grow in an exophytic fashion into the bladder lumen
- Single or multiple
- Pedunculated - arising on a stalk with a narrow base

Muscle-invasive disease

- Nearly always solid
- Often large and broad based, having an irregular, ulcerated appearance within the bladder
- Incidence of metastases - much more common
- Cause the death of 30–50% of patients

Non-invasive CIS – carcinoma in situ

- Irregularly arranged cells, with large nuclei and a high mitotic index
- Occur alone (Primary CIS)
- In association with a new tumour (Concomitant CIS)
- Occur later in a patient who has previously had a tumour (Secondary CIS)

Treatment

Superficial TCT

- Remove - completed by endoscopic resection
- Recurrence is common
- Regular endoscopic surveillance with check cystoscopy
- Intravesical chemotherapy reduces the risk of tumour recurrence
- Intravesical chemotherapy - single dose of Mitomycin C instilled after resection of the tumour
- For multiple or recurrent TCC - six intravesical treatments are given

Endoscopic surgery

- Resected in layers using a resectoscope
- Base of the tumour is sent separately for histological examination
- Small pinch biopsies are taken near to and distant from the primary lesion when CIS is suspected
- After removal of the tumour, two or three further loops of tissue from the base should be sent for histology
- Perforation of the bladder is a complication
- Bimanual examination - at the end of the endoscopic procedure
- After these procedures, an irrigating catheter is left in situ for 48 hours to prevent clot retention

Carcinoma in situ (CIS)

- Immunotherapy with intravesical BCG is effective in 60% of cases
- Close endoscopic surveillance with regular bladder biopsy

Invasive TCC

- High grade and the prognosis is poor
- Curative therapy - radical cystectomy (combined with a urinary diversion via an ileal conduit) or radical radiotherapy

Radical cystectomy

- Carefully assessed preoperatively
- It is important to have evidence that surgical cure is attainable
- Should receive prophylactic antibiotics - metronidazole, cefuroxime and amoxicillin
- Low-dose heparin or equivalent thromboembolic prophylaxis
- Abdomen is opened through a midline incision extending down to the symphysis pubis
- Liver and the retro peritoneum are checked for evidence of metastases, and the operability of the bladder is assessed
- Bilateral pelvic lymphadenectomy
- Bladder is removed
- Alternative drainage for urine – ileal conduit diversion

Radical radiotherapy

- External beam radiotherapy
- 60 Gy over a 4- to 6-week period
- Complete response rate of 40–50%
- Predictive biomarkers of radiosensitivity are emerging to guide - DNA damage-signalling protein MRE11
- Residual disease after radiotherapy - ‘salvage cystectomy’

- Complications –
  1. urinary frequency
  2. Diarrhoea
  3. Bladder Contracted And Fibrosed

Prognosis

- Approximately 30% develop muscle-invasive disease
- The 5y survival rate for muscle-invasive bladder cancer is 40–50%
- Metastatic TCC is poor prognosis with a median survival of 13 months
- Systemic chemotherapy with cis-platinum-containing regimes provides long-term response in 15% of cases

Pure squamous cell carcinoma

- Solid tumour
- Nearly always associated with muscle invasion
- Most prevalent form of bladder cancer in areas where bilharzia is endemic
- Associated with chronic irritation caused by stone disease in the bladder
- Bladder stones are caused to metaplasia

Pure adenocarcinoma

- Accounts for approximately 1–2% of all bladder cancers
- Usually arises in the fundus of the bladder at the site of the urachal remnant
- Occasionally, primary adenocarcinomas arise at other sites from areas of glandular metaplasia
- Can be treated with partial cystectomy