



NOTES

BLADDER CANCER

GENERALLY, WHAT IS IT?

PATHOLOGY & CAUSES

- Cellular cancers in bladder lining/wall

TYPES

- Non-urothelial
- Transitional cell carcinoma (AKA urothelial)

RISK FACTORS

- Irritants, carcinogens (e.g. smoking)

SIGNS & SYMPTOMS

- Hematuria, pain

DIAGNOSIS

LAB RESULTS

- Cystoscopy-guided biopsy (definitive diagnosis)

TREATMENT

- See individual disorders; depends on tumor stage, grade, location; kidney condition; localized/regional/metastatic

NON-UROTHELIAL BLADDER CANCERS

osms.it/non-urothelial-bladder

PATHOLOGY & CAUSES

- Bladder cancers that **do not arise** from the urothelium
- More invasive, poorer prognosis; may arise from urothelial layer but cells differentiate
- Squamous cell metaplasia**: cells of urothelium → **pancake-like appearance of squamous cells** → differentiate into squamous cell carcinoma
 - Grow in multiple locations
 - Cause extensive keratinization
 - Caused by chronic irritation (e.g. recurrent urinary tract infections, long-

standing kidney stones, infection with *Schistosoma haematobium*, a type of flatworm)

- Primary adenocarcinomas**
 - Frequently metastasize
 - Derive from glandular tissue → produce a lot of mucin
 - Primary form of bladder tumor associated with bladder exstrophy
 - Can develop as complication of *Schistosoma haematobium* infection
- Adenocarcinomas of urachus**
 - Similar to bladder adenocarcinomas
 - Arises from urachus (fibrous tissue)

sitting at dome of bladder)

RISK FACTORS

- Chronic urinary tract infections (UTIs)

COMPLICATIONS

- Metastasis

SIGNS & SYMPTOMS

- Bladder irritation
- Pain (location determined by tumor size/ extent—flank, suprapubic, perineal, abdominal, etc.)
- Hematuria
- Adenocarcinomas secrete mucin → mucusuria
- Urachal adenocarcinomas → abdominal mass

DIAGNOSIS

LAB RESULTS

- Cystoscopic biopsy
 - Definitive diagnosis based on cellular morphology

TREATMENT

SURGERY

- Transurethral resection, small tumors resected with cystoscope
- Radical cystectomy, complete bladder removal, dissection of surrounding lymph nodes
- Urachal adenocarcinomas → remove dome of bladder, urachal ligament, umbilicus

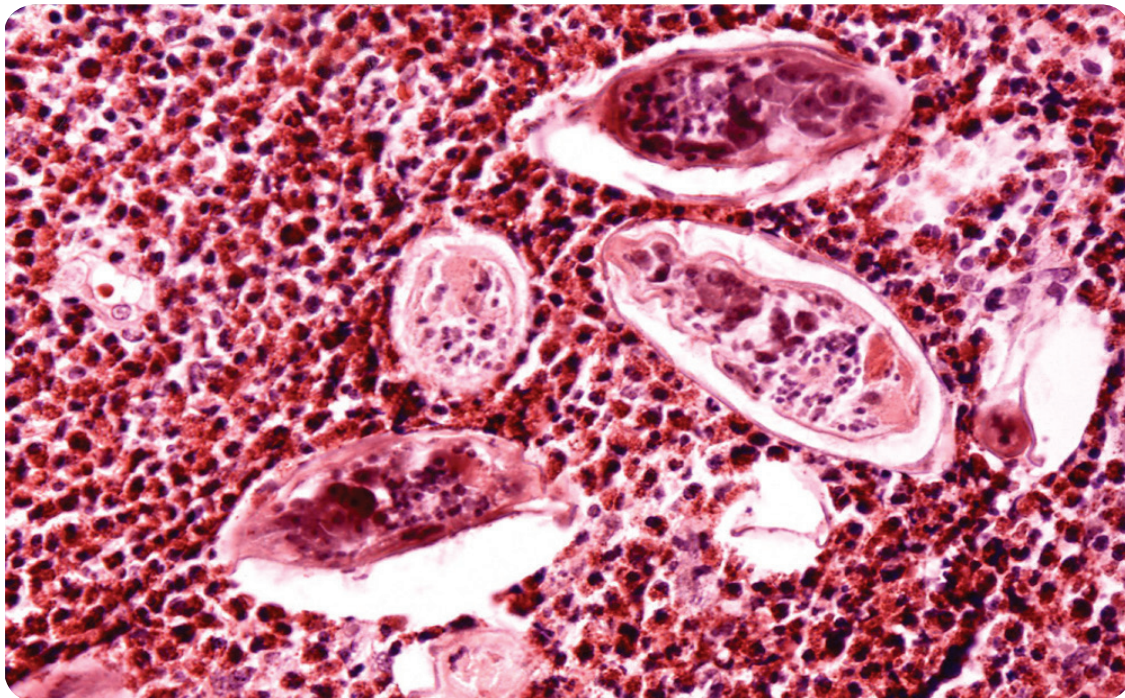


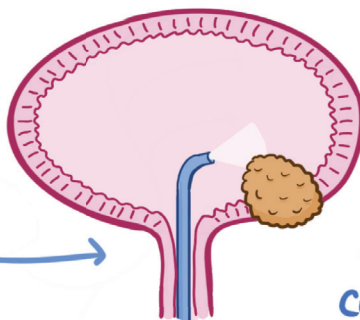
Figure 108.1 Histological appearance of *Schistosoma haematobia* eggs in a bladder biopsy.

DIAGNOSIS

it is **HELPFUL** to use
a **CYSTOSCOPE**

a thin tube fitted
with a light and
a camera

used for
CYSTOSCOPY



DEFINITIVE DIAGNOSIS
of

SQUAMOUS CELL
CARCINOMAS

&

ADENOCARCINOMAS

is dependent on the
CELLULAR MORPHOLOGY
of the
RESECTED TUMOR

Figure 108.2 Illustration of a cystoscopy being performed. A tissue sample will be collected and tested to determine if the tumor is the result of a squamous cell carcinoma or an adenocarcinoma.

TRANSITIONAL CELL CARCINOMA

osms.it/transitional-cell-carcinoma

PATHOLOGY & CAUSES

- Most common form of lower urinary tract cancer (bladder, urethra)
- AKA urothelial cell carcinoma
- Can also affect upper urinary tract (e.g. renal pelvis, ureter)
- Usually due to bladder urothelium
- Mutations in tumour suppressor protein p53 → horizontally growing, flat tumours (invasive)
 - p53 independent mutations → outward facing finger-like projections (non-invasive, less aggressive)
- Tumours often multifocal
 - **Field effect:** entire urothelial field exposed to carcinogens, all cells bathed in urine
 - **Implantation theory:** tumour cells detach from one site, implant at another

RISK FACTORS

- Advanced age, heavy alcohol use, human papillomavirus (HPV) infection, more common in individuals who are biologically male, chronic extended dwell times (not voiding bladder for long periods)

COMPLICATIONS

- Metastasis



MNEMONIC: P-SAC

Risk factors: exposure to carcinogens

Phenacetin: banned analgesic, once common

Smoking: primary risk factor

Aniline: compound used in rubber/dye manufacturing

Cyclophosphamide: cytotoxic medicine, cancer/autoimmune conditions

SIGNS & SYMPTOMS

- Hematuria (typically intermittent, painless, present throughout urination)
- Pain (location determined by size/extent of tumor: flank, suprapubic, perineal, abdominal, etc.)
- Constitutional symptoms (severe disease)
- Dysuria; frequent/urgent urination

DIAGNOSIS

DIAGNOSTIC IMAGING

Cystoscopy

LAB RESULTS

- Identify presence of blood in urine
- Cystoscopy-guided biopsy of tumour (definitive diagnosis)

TREATMENT

- Depends on tumor stage, grade, location; kidney condition; localized/regional/metastatic

MEDICATIONS

Chemotherapy

- Non-aggressive: localised via catheter
- Aggressive: systemic

SURGERY

- Non-aggressive: transurethral resection via cystoscopy (localized, non-invasive tumors)
- Aggressive: complete removal of prostate, bladder (cystoprostatectomy)

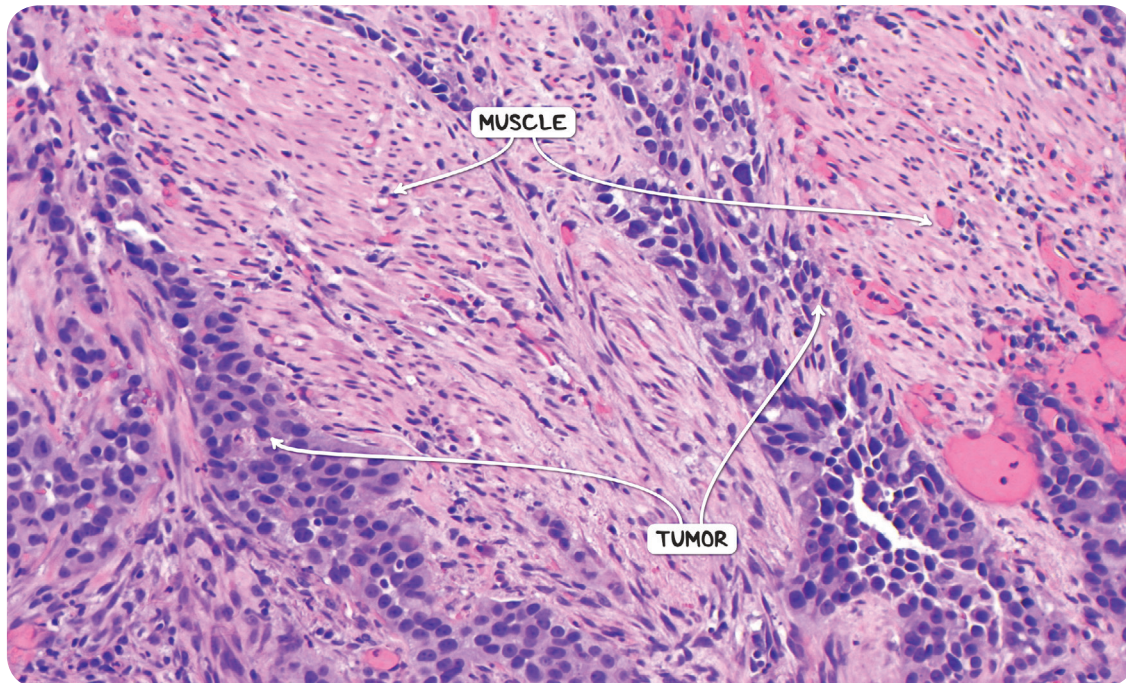


Figure 108.3 Histological appearance of muscle-invasive transitional cell carcinoma of the bladder.

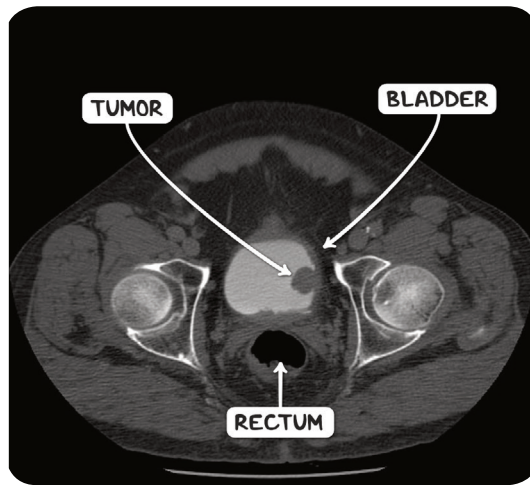


Figure 108.4 An MRI scan in the axial plane demonstrating a transitional cell carcinoma of the bladder.

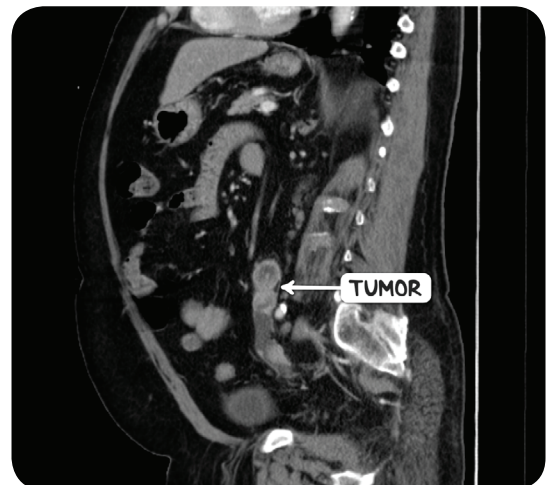


Figure 108.5 Transitional cell carcinoma can occur anywhere from the renal pelvis to the distal urethra. This coronal CT scan demonstrated a transitional cell carcinoma of the mid ureter.

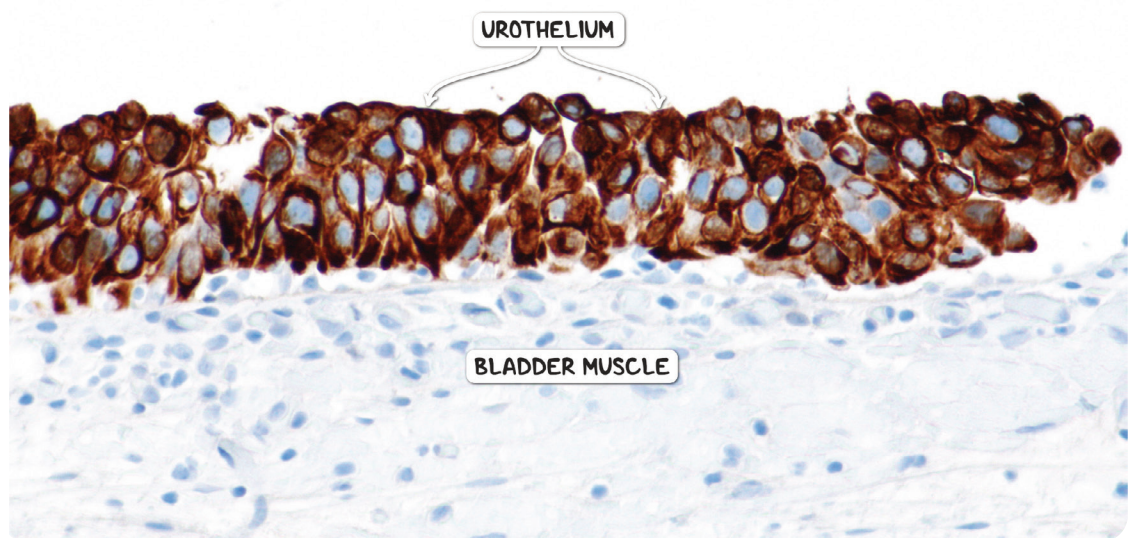


Figure 108.6 Immunohistochemical staining with compound CK20 demonstrating urothelial carcinoma in situ. The urothelium has undergone malignant transformation but has not yet begun to invade surrounding tissue.