430 Surgery Team

GU oncology

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Renal Tumors

- Benign tumours of the kidney are rare. Onchocytoma is the commonest benign tumor.
- All renal neoplasms should be regarded as potentially malignant(clear cell carcinoma is the most common histological subtype).
- Renal cell carcinomas arise from the proximal tubule cells.
- Male:female ratio is approximately 2:1.
- Increased incidence seen in Von Hippel-Lindausyndrome (type II).
- VHL syndrome: is a rare autosomal dominant disease that arises from mutation in the short arm of chromosome 3, that predisposes individuals to benign and malignant tumors (CNS, clear cell renal carcinomas, pheochromocytomas, pancreatic neuroendocrine tumors, pancreatic cysts)
- Pathologically may extend into renal vein and inferior vena cava. It could reach the heart. Tumor thrombus could obstruct IVC and causes bilateral DVT.
- Blood born spread can result in 'cannon ball' pulmonary metastases.
- Lung is the most common site.
- DDx of cannon ball: lung metastases, TB and pleural effusion.
- If bilateral kidney tumors are present, you should consider gene mutation (VHL).

Clinical features:

- 10% present with classic trial of grosshaematuria, loin pain and a mass. Classic triad features usually present with complicated stage. Nowadays the commonest presentation is incidental finding.

Paraneoplastic syndrome

- Other presentation include a pyrexia of unknown origin, hypertension.
- Hypercalcaemia due to production of a PTH-like hormone. Hypercalcaemia without bone metastases.
- Polycythaemia due to erythropoietin production.
- Non-metastatic hepatic dysfunction called Stauffer's syndrome, characterized by elevated liver enzymes (remember: no liver metastasis, no jaundice!)
- Treated with surgical removal of the kidney, except for hypercalcaemia, it's treated medically.

Investigations:

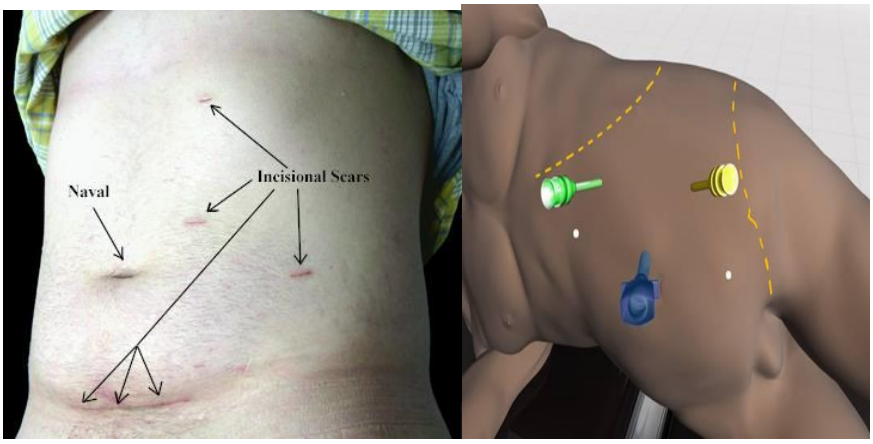
- Diagnosis can often be confirmed by renal ultrasound.
- CT scanning allows assessment of renal vein and caval spread (also it's used for staging the tumor).
- Echocardiogram should be considered if clot in IVC extends above diaphragm (TEE).

- Tumor thrombus must be removed surgically.
- If the tumor thrombus extended above the diaphragm ➔ 20% survival rate.

Management:

- Unless extensive metastatic disease it invariably involves surgery.
- Kidney tumors are both radioresistant and chemoresistant.
- Surgical option usually involves a radical nephrectomy.
- Kidney approached through either a transabdominal or loin incision.
- Laparoscopic nephroctomy is the gold standard to any kidney tumor (incision is through the groin)
- In postmenopausal women (with a hysterectomy)➔transvaginal.
- If there's lymph nodes involvement ➔ surgery has no role.
- Renal vein ligated early to reduce tumour propagation.
- Kidney and adjacent tissue (adrenal, perinephric fat) excised.

Rx:



- Lymph node dissection of no proven benefit.
- Solitary (e.g. lung metastases, brain) can occasionally be resected.
- Radiotherapy and chemotherapy have No role.
- Immunotherapy (monoclonal antibodies and cytokines) can help (Performance status). It's only effective in pts with good performance status.

Bladder Tumors

Pathology:

- Of all bladder carcinomas:
  - 90% are transitional cell carcinomas.
  - 5% are squamous carcinoma (bad prognosis) Metaplasia or dysplasia that occur as a result of chronic irritation (chronic UTI, Schistosomaiasis).

    - 2% are adenocarcinomas. It occurs at the dome of the bladder, when there's urachal fistula between the bladder and umbilicus or fistula between the bladder and bowel.
- TCCs should be regarded a 'field change' disease with a spectrum of aggression.
- 80% of TCCs are superficial and well differentiated (above the muscle of the bladder wall; muscularis proprea)
    - Only 20% progress to muscle invasion.
    - Associated with good prognosis, but higher recurrence.

- 20% of TCCs are high-grade and muscle invasive
    - 50% have muscle invasion at time of presentation.
    - Associated with poor prognosis.

Etiological factors:

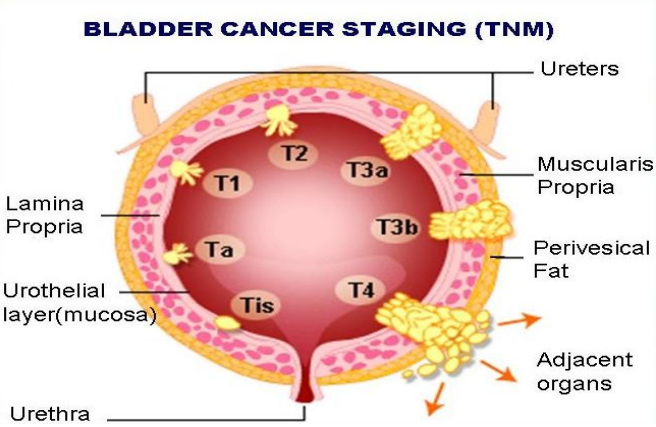
- Occupational exposure.
- 20% of transitional cell carcinomas are believed to result from occupational factors.
- Chemical implicated - aniline dyes, chlorinated hydrocarbons.
- Cigarette smoking in TCC and squamous carcinoma.
- Analgesic abuse e.g. phenacitin.
- Pelvic irradiation - for carcinoma of the cervix.
- *Schistosomahaematobium* associated with increased risk of squamous carcinoma.

Presentation:

- 80% present with painless hematuria.
- Also present with treatment-resistant infection or bladder irritability and sterile pyuria (DDx: TB).

Investigation of Painless Haematuria: usually painless gross hematuria indicates caner until proven otherwise.

- Urinalysis.
- Ultrasound - bladder and kidneys.
- KUB - to exclude urinary tract calcification.
- Cystoscopy.
- Urine Cytology.
- Consider IVU-CT scan if no pathology identified
- On IVP, if tumor is present you'll find filling defect and calcification.



Pathological staging:

- Requires bladder muscle to be included in specimen.
- Staged according to depth of tumour invasion.
- Tis In-situ disease.
- Ta Epithelium only.
- T1 Lamina propria invasion.
- T2 Superficial muscle invasion.
- T3a Deep muscle invasion.
- T3b Perivesical fat invasion.
- T4 Prostate or contiguous muscle.

Tis ➔ T1: superficial T2 ➔ T4: invasive (needs cystectomy)

Grade of Tumor:

- G1 Well differentiated.
- G2 Moderately well differentiated.
- G3 Poorly differentiated.

Carcinoma in-situ:

- Carcinoma-in-situ is an aggressive disease.
- Often associated with **positive cytology**.
- 50% patients progress to muscle invasion.
- Consider immunotherapy.
- If fails patient may need radical cystectomy.

Treatment of bladder carcinomas:

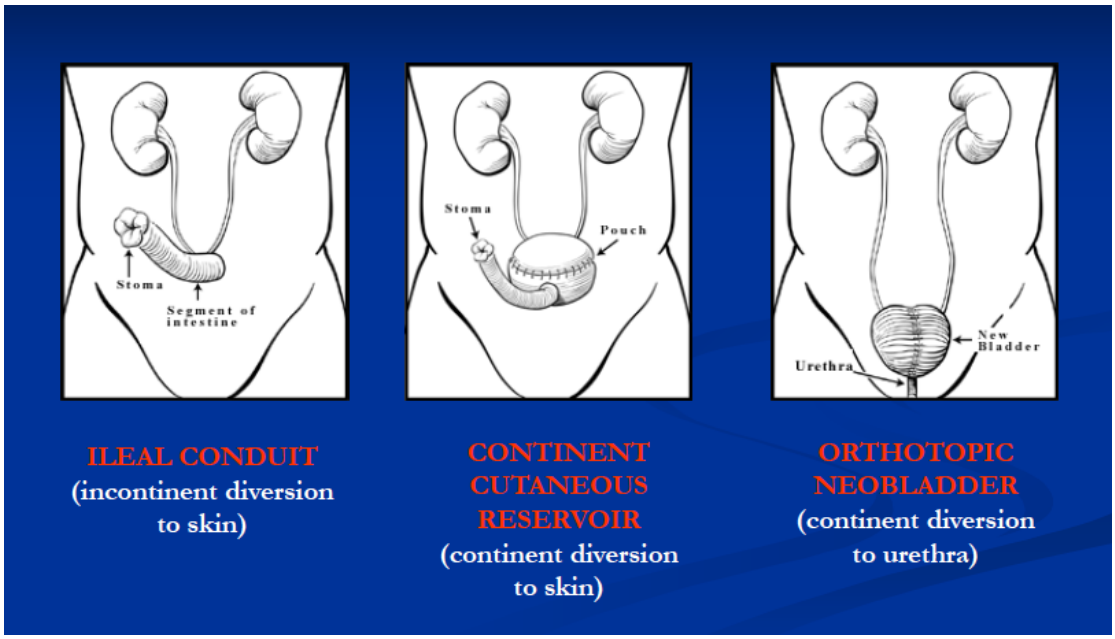
A. Superficial TCC

- Requires transurethral resection and regular cystoscopic follow-up (because of high recurrence rate).

- Consider prophylactic chemotherapy if risk factor for recurrence or invasion (e.g. high grade).
- Consider immunotherapy.
- BCG = attenuated strain of *Mycobacterium bovis.* Gives rise to immune reaction against bladder cancer cell.
- Reduces risk of recurrence and progression.
- 50-70% response rate recorded.
- Occasionally associated with development of systemic mycobacterial infection.
- TURBT (transurethral resection of bladder tumor): only in localized superficial tumors.

B. Invasive TCC

- Radical cystectomy has an operative mortality of about 5%.
- Removal of bladder, prostate, lymph nodes and distal ureter. Uterus and cervix in women.
- Urinary diversion achieved by:
  - Ileal conduit. (Taken from the intestine).
  - Neo-bladder



- Local recurrence rates after surgery are approximately 15% and after radiotherapy alone 50%.
- Pre-operative radiotherapy is no better than surgery alone.
- Adjuvant chemotherapy may have a role.

ProstateTumors

- Commonest malignancy of male urogenital tract. Number 3 cancer killer in men in USA and the 8th most common tumor here in Saudi.
- Rare before the age of 50 years. Screening is recommended at the age of 40
- Found at post-mortem in 50% of men older than 80 years.
- 5-10% of operation for benign disease reveal unsuspected prostate cancer.

Screening program in North America for males above the age of 40 every year:
–PSA test

–Digital Rectal exam

–If any of them positive this is an indication to take a biopsy

Pathology:

- The tumours are adenocarcinomas.
- Arise in the peripheral zone of the gland. While BPH arises in transitional zone.
- Spread through capsule into perineural spaces, bladder neck, pelvic wall and rectum.
- Lymphatic spread is common.
- Haematogenous spread occurs to axial skeleton.
- Tumours are graded by Gleeson classification.
- The ONLY organ that will not have metastasis from prostate cancer is BRAIN

Clinical features:

- Majority these days are picked up by screening.
- 10% are incidental findings at TURP(transurethral resection of the prostate).
- Remainder present with bone pain, cord compression or leuco-erythroblasticanaemia.
- Renal failure can occur due to bilateral ureteric obstruction.
- It's a slow growing disease.

Diagnosis:

- With locally advanced tumours diagnosis can be confirmed by rectal examination.
- Features include hard nodule or loss of central sulcus.
- Transrectal biopsy should be performed.
- Multiparametric MRI maybe useful in the staging of the disease.

- Bone scanning may detect the presence of metastases.
- Unlikely to be abnormal if asymptomatic and PSA < 10 ng/ml.

Serum prostate specific antigen(PSA):

- Kallikrein-like protein produced by prostatic epithelial cells.
- 4 mg/ml is the upper limit of normal.
- >10 mg/ml is highly suggestive of prostatic carcinoma.
- Can be significantly raised in BPH.
- Useful marker for monitoring response to treatment.

Treatment:

- More men die with than from prostate cancer.
- Treatment depends on stage of disease, patient's age and general fitness.
- Treatment options are for:

1. Local disease
    - Observation.
    - Radical radiotherapy.
    - Radical prostatectomy.

    } In younger pts
2. Locally advanced disease
    - Radical radiotherapy.
    - Hormonal therapy.
3. Metastatic disease
    - Hormonal therapy.

Brachytherapy: internal radiotherapy, in which radiation directly hits the prostate.

EBRT: extra beam radiation therapy.

Hormonal therapy:

- 80-90% of prostate cancers are androgen dependent for their growth.
- Hormonal therapy involves androgen depletion.
- Produces good palliation until tumours 'escape' from hormonal control.
- Androgen depletion can be achieved by:
    - Bilateral orchidectomy (removal of testicles).
    - LHRH agonists – goseraline.
    - Anti-androgens - cyproterone acetate, flutamide, Biclutamide.
    - Complete androgen blockade.

Testicular Tumors

- Commonest presentation: testicular swelling on the side of the tumor.

- Commonest malignancy in young men.
- Highest incidence in caucasians in northern Europe and USA.
- Peak incidence for teratomas is 25 years and seminoma is 35 years.
- In those with disease localized to testis more than 95% 5-year survival possible (very curable).
- Risk factors include cryptorchidism, testicular maldescent, Klinefelter's syndrome and testicular torsion.

Classification:

- Seminomas (~50%).➔ Radiosensitive.
- None-Seminoma (~50%): ➔radioresistant
    - Teratomas.
    - Yolk sac tumours.
    - Embryonal.
    - Mixed Germ cell tumor.

Investigation:

- Diagnosis can often be confirmed by testicular ultrasound.
- Pathological diagnosis made by performing an inguinal orchidectomy.
- Disease can be staged by thoraco-abdominal CT scanning.
- Tumor markers are useful in staging and assessing response to treatment.

1. Alpha-fetoprotein (alphaFP):
    - Produced by yolk sac elements.
    - Not produced by seminomas.
2. Beta-human chorionic gonadotrophin (betaHCG):
    - Produced by trophoblastic elements.
    - Elevated levels seen in both teratomas and seminoma.
3. LDH.

Stage Definition:

- I Disease confined to testis.
- IM Rising post-orchidectomytumour marker.
- II Abdominal lymphadenopathy
    - A < 2 cm B 2-5 cm C > 5 cm
- III Supra-diaphragmatic disease.

Seminomas:

- Seminomas are radiosensitive.
- The overall cure rate for all stages of seminoma is approximately 90%.
- Stage I and II disease treated by inguinal orchidectomy plus.

    - Radiotherapy to ipsilateral abdominal and pelvic nodes ('Dog leg') or
    - Surveillance
- Stage IIC and above treated with chemotherapy.
- Radical orchidectomy is done through the groin, not through the scrotum.

None-Seminoma:

- None-Seminoma tumors are not radiosensitive.
- Stage I disease treated by orchidectomy and surveillance Vs RPLVD Vs Chemo.
- Chemotherapy (BEP = Bleomycin, Etopiside, Cisplatin) given to:
    - Stage I patients who relapse.
    - Metastatic disease at presentation.

Adrenal tumors

Adrenal incidentaloma

An incidentaloma is a mass lesion found unexpectedly in an adrenal gland by imaging procedure performed for reasons other than suspected adrenal pathology. The vast majority are non-secretory benign lesions.

Signs and symptoms:

Often none. Closer questioning may reveal signs and symptoms of a hypersecretory state, e.g. cushing's syndrome, conn's syndrome and phaeochromocytoma.

Investigations:

- To exclude functioning tumor.
- CT scans.

Treatment:

None if no features of hypersecretion or malignancy. Excision if:

1. A functioning tumor
2. >4 cm, especially if features of malignancy on CT imaging; small non-functioning tumors are best, followed by an interval scan at 6 months to exclude increase in size.

Carcinoma of the adrenal gland

Adrenocortical carcinoma is rare but aggressive. It is potentially curable in the early stages but only 30% are confined to the adrenal gland at the time of diagnosis; 10% of pheochromocytoma are malignant and occur within the adrenal medulla. Secondary deposits are more common than primary tumors, the adrenal gland being the fourth most common site of metastases after lungs, liver and bone. The most common primary sites are lung, breast, skin (melanoma), kidney, thyroid and colon.

Symptoms and signs:

Signs of excess hormone production, e.g. cushing's, androgen excess. Abdominal pain. Flank pain. Signs of spread to distant organs.

Investigations:

- Urea & electrolytes
- Circulating hormone level
- CT
- MRI

Treatment:

Surgery, chemotherapy, radiotherapy, depending on the degree of spread.

Pheochromocytoma

A. General characteristics

- Pheochromocytomas are rare tumors that produce, store, and secrete catecholamines.
- 90% found in adrenal medulla (10% extra-adrenal)
- Curable if diagnosed and treated, **but may be fatal if undiagnosed**.

B. Clinical features

- HTN—BP is persistently high, with episodes of severe HTN (paroxysmal).
- Severe pounding headache
- Inappropriate severe sweating
- Palpitations, with sudden severe HTN
- Anxiety
- Laboratory findings: hyperglycemia, hyperlipidemia, hypokalemia

C. Diagnosis

- Urine analysis.

- Urine/serum epinephrine and norepinephrine levels.
- CT, MRI.
- I- metaiodobenztlguanidine scan.

D. Treatment

- Surgical tumor resection with early ligation of venous drainage is the treatment of choice.
- Medically.

MCQs (from 429 teamwork):

1- the most common presentation of renal tumors is:
-fever of unknown origin
-hypertension
-Incidental finding
-hematuria

2-which of the following is the commonest malignancy in young men ?
-Lung
-Testicular
-Colon
-Bone

3-Nephrouretroectomy is the treatment of choice in :
-Transitional cell carcinoma of the renal pelvis
-Renal cell carcinoma
-Non-functioning pyelonephrotic disease
-Non-functioning tuberculsis
-Angiomyolipoma

4- Regarding cancer prostate all true except:
-It's a very common disease in the kingdom
-The growth of the tumor can be affected by steroids.
-Usually treated by testerone.
-can be treated by oestrogens.
-can present with back pain.

5- Benign prostatic hyperplasia all true except:
-is a disease of the young.
-usually presents with hematuria.
-can present with renal failure.
-usually present with hydronephrosis.
-can cause bladder stones.