Surgery Topics of Block L

Renal stones:

struvite stones are also known as staghorn and uric acid stones are mostly multiple.

Struvite stones usually leads to infection and pyelonephritis

Investigation: non-contrast CT is the investigation of choice.

Treatment options for renal stones include if the stone is less than 5 mm then it can pass spontaneously with drinking plenty of water.

If the stone is 6 to 8 mm then it should be treated medically with temsulonsin which is an alpha blocker along with plenty of water.

If the stone is more than 8 mm that in can be treated with extracorporeal shockwave lithotropy and percutaneous nephrolithotomy.

ECSL for <2cm renal and <1cm ureter stones

PCNL for >2cm stones

Open Surgery Indication:

Treatment failure of ESWL/ PCNL , obese patients, large complex stones occupying many Calyces

1- Extended pyelolithotomy for branching staghorn stones (present in Calyces of the Kidney)

2- Anatrophic Nephrolithotomy for large complex stones fully branching into the peripheral calyces

3- Partial Nephrectomy for multiple stones at the lower pole & non functional lower pole

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Renal Cell Carcinoma a.k.a Grawitz Tumor

Adenocarcinoma is the most common tumor of the kidney and mostly it arises from the proximal convoluted tubules.

Its spread to the lung shows cannonball appearance on x-ray

Hilar and para-aortic lymph nodes are involved.

Investigations:

CT scan is the gold standard for staging of renal tumor. We use MRI for tumor extended into the renal vein and inferior vena cava.

TNM classification:

T1 tumor is less than 7 cm and limited to the kidney.

T2 tumor is more than 7 cm limited to the kidney.

T3 tumor extend into the major veins or invade para-nephric tissue but does not invade adrenal gland or beyond gerotas fascia.

T4 tumor invades beyond gerotas fascia or adrenal gland.

Treatment:

T1b, T2 , T3a, T4 ☞radical nephrectomy

T1a ☞laparoscopic nephrectomy or partial nephrectomy which is a nephron sparing procedure.

3b and 3c ☞clamp inferior vena cava both above and below the tumor.

For spinal and bone metastasis we use palliative treatment.

Pelvi-Ureteric Junction Obstruction

It is the most common cause of hydronephrosis in neonates. The etiology is either congenital due to an intrinsic narrowing of the PUJ or extrinsic compression by the aberrant blood vessels crossing the ureter.

Clinical features : include flank pain increased by taking fluids and relieved by voiding investigation.

99TC-DTPA-MAG3 isotope renal scan is the diagnostic investigation for PUJO.

Treatment: symptomatic PUJO with rising creatinine or renal scan evidence of functional loss necessities surgical repair. The operation of choice is Andersen Hynes Dismembered pyeloplasty or endoscopic pyelotomy in

which PUJ narrowing is dilated by a balloon or cut with hot knife.

Bladder Carcinoma

Bladder cancer is the second commonest urological cancer. It affects the people in their 60 to 70 years of life. Its incidence is 2.5 times higher in men than women.

Etiology includes exposure to aniline dyes, smoking, drugs like phenacetin, cyclophosphamide, carcinogenic compounds like benzidine, and workers working in the rubber industry, textile industry, dye industry, and tire tube and cable workers.

Clinical features :

painless gross panhematuria, irritative lower urinary tract symptoms, advanced bladder obstruct ureteric orifice leading to hydronephrosis and renal failure, cachexia in advanced stages.

Investigations: cystoscopy is investigation of Choice

TNM staging:

Ta ☞non-invasive papillary carcinoma

TIS ☞carcinoma in situ

T1 ☞carcinoma invading subepithelial connective tissue

T2 ☞tumor invading detroser muscle

T3 ☞tumor extends beyond muscle into the perivesical fat

T4a ☞tumor invades the prostate, uterus, and bowel

T4b ☞tumor invades pelvic or abdominal wall

Regional lymph nodes metastasis:

☞N1 metastasis in a single lymph node less than 2 cm

☞N2 metastasis in lymph node 2 to 5 cm

☞N3 metastasis in lymph node greater than 5 cm.

Treatment:

superficial Ta and T1 ☞ transurethral resection of bladder(TURB) tumor with a part of the bladder wall

carcinoma in situ ☞ TURB plus Intravesical BCG is also given.

T2 and T3 👉 radical cystectomy in which the bladder, perivasococcal fat, pelvic lymph nodes, prostate, and proximal urethra are removed. In women, uterus and anterior vaginal wall are also removed. After removal of bladder, urinary diversion is required. In patients who are unfit for surgery or those who are not willing for radical cystectomy can be treated by radical radiotherapy.

T4 👉 chemotherapy, radiotherapy, and palliative surgery.

Prognosis: superficial tumors have 5-year survival of 75% while muscle invasive tumor it is 10%.

Urinary Diversion after Cystectomy.

The most common method is ileal conduit in which a segment of the ileum is taken along with its mesentery and both ureters are implanted into it. The other end of the segment of ileum is brought out in the right iliac fossa as ileostomy and urostomy bag is applied over it to collect urine.

2. Bladder reconstitutions. A new bladder is constructed using either loop of ileum(studer's pouch)or joined with ascending colon(indiana, men's pouches) The ureters are implanted into it and the pouch is anostomosed with urethra to provide continence.

3. Uterosigmitostomy. The ureters are implanted into sigmoid colon and urine is passed with stools.

Benign prostatic hyperplasia.

Average age presentation is about 60 years.

Etiology of BPH. Testosterone is converted into 5-dihydrotestosterone by the enzyme 5-alpha reductase, which is found in the prostate gland. Increased dihydrotestosterone causes increased growth and thus enlargement of the prostate.

BPH typically affects the transitional zone of prostate components of BPH.

1-mechanical component : It is produced by prostate and thus produces mechanical obstruction to the bladder outflow causing symptoms of BPH (lower urinary tract symptoms).

2- dynamic component: Contraction of smooth muscle in the prostate and bladder neck also leads to resistance of urinary outflow.

Symptoms of BPH are divided into two.

1-Irritative symptoms: are produced in response to urinary outflow obstruction which causes bladder overreaction in response to that obstruction . These include dysuria, frequency, urgency, nocturia, urgent incontinence.

2-Obstructive symptoms due to mechanical obstruction includes poor steam, hesitancy, intermittent steam, incomplete emptying, postvoid debrilling, and retention of urine.

Diagnosis of BPH. There is a score to know about the severity of symptoms of BPH.

A score of 0 to 7 indicate mild symptoms,

8 to 19 indicates moderate symptoms,

20 to 35 indicates severe symptoms.

Diagnostic tests: ultrasonography which is a first-line non-invasive investigation for lower urinary tract symptoms due to BPH. A residual volume more than 100 ml signifies bladder outflow obstruction means that post void urine in bladder should be less than 50ml but more than 50 ml shows bladder outflow obstruction.

We also do a prostate specific antigen test PSA and the urodynamic testing also.

Medical Rx: @blockers

5@ reductase inhibitors

Surgical Rx : Transurethral Resection of Prostate (TURP) ☞ Gold Standard. We use glycine for continuous bladder irrigation. And this may lead to Hyponatremia.

Prostatic Carcinoma

Most common malignant tumor of men over the age of 65 years. It involves the peripheral zone of the prostate.

Spread:

Local spread ☞It grows upward to involve the seminal vesicles, bladder, neck, and trigone and may involve both ureteric openings to cause hydro-ureter or hydronephrosis. Distal spread of tumor can involve the distal sphincter.

Hematogenously ☞ to the lower spine vertebra mostly.

Lymphatic spread ☞ involves iliac nodes and pre-sacral nodes plus obturator nodes

Staging

☞T1. Tumor not palpable found after TURP

☞T2 Tumor confined within prostatic capsule.

☞T3. Involvement of prostatic capsule and seminal vesicles.

☞T4 Involves adjacent structures and pelvic side walls.

Diagnosis:

A PSA value of greater than 10 ng/ml and positive findings of prostatic carcinoma DRE suggest transrectal ultrasound and a 12 core biopsy of prostate.

Treatment:

T1a☞surveillance

T1b, T1c, T2 ☞radical prostatectomy or radical radiotherapy (complications include Urinary Incontinence and Impotence)

T3 and T4 ☞ hormonal ablation.

Renal Trauma

Renal trauma staging.

Grade 1 contusion but no laceration.

Grade 2 laceration less than 1 cm

Grade 3 laceration more than 1 cm

Grade 4 injuries involving collecting system.

Grade 5 shattered kidney or hilum avulsion.

{Note. Grade 2&3 are surgically treated}

Clinical future. Hematuria is the hallmark plus flank pain and bruising.

Investigation. Best modality for renal injuries in hemodynamically stable pt is CT scan.

For unstable patient which is bleeding we use one-shot IVU as an exploration.

Cryptoorchidism

A condition where a testis fails to descend into the scrotum

Types:

absent ☞testis are congenitally absent,

retractile ☞testis move back and forth between the scrotum and the groin

incomplete descended ☞ the descent is arrested anywhere from abdomen to the superficial ring

ectopic ☞the testis lies somewhere in the superficial inguinal pouch, perineum, thigh, or root of the penis

Investigation:laparoscopy is the investigation of choice

Treatment: Orchidopexy is performed in which testis are pulled down into the scrotum and retained in sub-dartous pouch, sometimes it may not be possible to bring it down in this situation two-stage Fowler procedure is performed.

Posterior urethral valve.

It is an abnormal congenital obstructing membrane that is located within the posterior male urethra. It is the most common urological cause of end-stage renal disease in

children. It causes urinary retention and catheter can be passed easily.

Clinical features include weak urinary system, pain and difficulty in maturation, bladder over-distention, vesico-ureteric reflux.

Diagnosis: Ultrasonograpghy shows thick, dilated, walled bladder and dilated posterior urethra. Micturating cystourethrogram will also show vesico-ureteric reflux.

Rx ☞endoscopic ablation of the posterior urethral valve.

Breast Tissue Investigation

Mammography ☞It is indicated for less dense breast tissue so more often it is used after the age of 35 years.

Ultrasound ☞ can even detect dense breast tissue so it is useful before the age of 35 years.

MRI ☞ can distinguish scar from local recurrence of breast carcinoma. A standard of care to assess multifocality and multicentricity when lobar carcinoma is

diagnosed and also to assess the extent of ductal carcinoma in situ. It is the best imaging modality in women with implants.

Triple assessment ☞It is a triage of clinical examination history plus radiological assessment and histological analysis.

Fibroadenoma a.k.a Breast Mouse

most common benign tumor of the female breast which usually occurs in response to normal hormonal stimuli. Average age presentation is 15 to 25 years. Surgery is indicated only if its size is more than 5 cm.

Phyllodes Tumor

Arises from the stroma of breast and rarely from pre-existing fibrodenoma. It is usually benign but locally invasive, occurs over the age of 40 years. Massive tumor with bosselated surface and occasionally ulcerate the

overlying skin because of pressure necrosis. They are mobile over the chest wall & matastisize by bloodstream.

Treatment: wide local incision , but mastectomy may be required in case of massive recurrent and malignant tumor.

Galactocele ☞ subareolar cyst which always dates from Lactation. Rx ☞ needle aspiration.

Amazia☞ congenital absence of Breast

Polymazia☞ accessory breast most commonly found in the axila

Diffuse Hupertrophy Of Breast ☞ healthy girl with exaggerated response to Estrogen.

Mammary Duct Fistula: communication b/w peri areolar skin & abnormal milk duct. occurs as a result of duct ectasia , periductal mastitis or drainage of breast abscess.

Rx☞ Antibiotics, cessation of smoking, & excision of diseased duct

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Mondors Disease: superficial thrombophlebitis of veins over the breast and anterior abdominal wall. Rx☞ self limiting & NSAIDs

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Periductal Inflammation/ Duct Ectasia : Rx ☞ Flucloxacilin or Metronidazole

Surgery ☞ Hadfield Operation (excision of all major ducts)

Aberration of normal development and involution (ANDI).

It is also known as fibrocystic disease, fibroidenosis, mastopathy, chronic mastitis, or mammary dysplasia.

The disease exhibits four features.

1. Cyst formation 2. Fibrosis 3. Hyperplasia 4. Papillomatosis

Clinical features

1. Lumpiness of the breast

2. Non-cyclical nostalgia

Rx of Lumpiness☞Exclude malignancy by clinical examination and radiological support. Review the patient during different times of menstruation. Tissue diagnosis may be needed to relieve the anxiety of the patient.

Rx of Mastalgia☞ reassurance, adequate support, evening primrose oil, Danazol, tamoxifen, and antidepressants.

Breast Carcinoma

TNM staging, TIS carcinoma in situ,

T1 ☞< 2 cm,

T2 ☞2-5 cm,

T3 ☞> 5 cm,

T4 ☞involving chest wall or skin extension.

Manchester staging system

Stage 1☞mobile lump in the breast, no palpable axillary lymph node.

Stage 2 ☞mobile lump in the breast palpable axillary lymph node.

Stage 3 ☞fixed lump in the breast with or without palpable mobile fixed axillary lymph node.

Stage 4 ☞distance metastasis .

☞Low grade DCIS is treated with partial mastectomy alone. Intermediate DCIS is treated with partial mastectomy plus radiation. Multiple and high grade tumor require mastectomy with or without radiation therapy. Adjuvant tamoxifen & aromatase inhibitor should be given to hormone receptor positive patients.

☞LCIS is treated with lifelong surveillance prophylactic tamoxifen therapy or bilateral total mastectomy. We should do prophylactic mastectomy in LCIS patients with BRCA1 mutation.

☞Stage 1 and stage 2, surgery is the main treatment. If the tumor area is more than 4 cm, then mastectomy should be indicated.

Stage 3 Extended Simple Mastectomy plus radiotherapy and chemotherapy

Mastectomy Types

Simple mastectomy ☞involves removal of all breast tissue, nipple, areolar complex, and skin.

Extended simple mastectomy☞ involves simple mastectomy plus level 1 axillary lymph nodes clearance.

Radical pate mastectomy☞ involves whole breast removal plus large portion of the skin containing nipple and arola, all the fat and fascia of axilla, and lymph nodes up to level 2.