

## **BASIC SCIENCE TOPICS - UROLOGY**

### **(1) KIDNEY**

- a) Embryology
- b) Anatomy
- c) Physiology
  - foetal renal function
  - normal renal function
  - acute renal failure
  - chronic renal failure
  - pathophysiology of obstructive uropathy
  - renovascular hypertension

### **2. URINARY TRACT INFECTION (UTI)**

- a) Pathogenesis of UTI - bacterial adherence
  - host defence mechanisms etc
- b) Bacteriology of Acute Upper and Lower Urinary Tract Infections
- c) "Office Bacteriology"
- d) Principles of Antibiotic Chemotherapy in UTI
  - duration of treatment
  - treatment of UTI in pregnancy
- e) Diagnosis and Management of Gram-Negative Septicaemia
- f) Antibiotic Prophylaxis in Urology
- g) Acute & Chronic Prostatitis
- h) Urethral Syndrome

### **3. SPECIFIC INFECTIONS**

- a) Tuberculosis
- b) Shistosomiasis
- c) Hydatid Disease
- d) Sexually Transmitted Diseases (STD's)
  - urethritis

- epididymitis
- genital warts
- genital ulceration
- HIV
- Herpes

e) Hepatitis

#### **4. UROLITHIASIS**

a) Physicochemistry of Stone Formation

b) Calcium       - calcium metabolism  
                       - primary hyperparathyroidism  
                       - classification of hypercalciuria  
                       - medical treatment of hypercalciuria

c) Oxalate       - oxalate metabolism  
                       - classification of hyperoxaluria  
                       - medical treatment of hyperoxaluria

d) Citrate       - pathophysiology

e) Uric Acid       - uric acid metabolism  
                       - etiology and medical treatment of uric acid stones

f) Struvite Calculi - pathogenesis  
                                   - medical treatment

g) Cystinuria       - metabolism and genetics  
                                   - medical treatment of cystine stones

h) Investigation of Recurrent Calcium Stone Former

i) Energy Sources to Fragment Stones (ESWL and  
 Contact Lithotripsy) - principles  
                                   - indications  
                                   - contraindications

#### **5. URETER**

a) Embryology

b) Anatomy

- c) Physiology of Ureteric Obstruction (incl. PUJ obstruction)
  - medical management of renal colic.

## **6. BLADDER**

- a) Embryology
- b) Anatomy
- c) Physiology of Normal Micturition
- d) Pharmacology of the Lower Urinary Tract
- e) Incontinence - classification
  - principles of treatment
- f) Principles of Urodynamics

## **7. PROSTATE**

- a) Embryology
- b) Anatomy
  - zones
- c) Physiology
  - functions of prostate
  - androgen metabolism
- d) BPH
  - etiology and pathogenesis
  - medical management of BPH
- e) Energy sources for Treatment of Prostate
  - EVAP
  - TUNA
  - Hyperthermia
  - Ultrasound
  - Cryotherapy

## **8. ANDROLOGY**

- a) Embryology of External Genitalia
- b) Anatomy of Male Genital Tract
- c) Hypothalamic Pituitary - Testicular Axis
  - normal control
  - classification of hypogonadism
  - causes of gynaecomastia

- medical treatment of advanced Ca Prostate
- d) Intersex
  - steroid biosynthetic pathway
  - classification of intersex disorders
- e) Infertility
  - normal spermatogenesis
  - normal semenanalysis
  - classification of causes of infertility
  - antisperm antibodies
  - medical treatment of infertility
- f) Erectile Dysfunction - anatomy of penis
  - physiology of erection
  - medical management of erectile dysfunction
- g) Ejaculation
  - physiology of ejaculation
  - classification of disorders of ejaculation

## **9. ONCOLOGY**

- a) Genetics in Urological \*Malignancies
- b) Principles of Immunology
- c) Cancer Biology
  - tumour cell growth
  - oncogenes
  - growth factors
  - tumour suppressor genes
  - angiogenesis etc
- d) Screening for Urological Malignancies
- e) Epidemiology (Incidence & Etiology) of EACH Urological Malignancy
- f) Tumour Markers in Urology
- g) Principles of Chemotherapy
- h) Principles of Radiotherapy

## **10. ADRENAL**

- a) Embryology
- b) Anatomy
- c) Physiology

- d) Cushings Syndrome
- e) Conn's Syndrome
- f) Pheochromocytoma

## **11. IMAGING**

- a) IVP
  - Urographic contrast media
  - Physiology of IVP
- b) Nuclear Medicine in Urology - isotopes
  - mode of action
  - clinical indications
- c) MRI
  - principles

## **12. ENERGY SOURCES IN UROLOGY**

- a) Diathermy
  - principles
  - clinical application
  - dangers and precautions
- b) Lasers
  - effects
  - types
  - clinical applications

## **13. TISSUE TRANSFER IN UROLOGY**

- a) Wound Healing
- b) Grafts and flaps
- c) Incorporation of Bowel into Urinary Tract
  - complications

## **14. MISCELLANEOUS**

- Clinical Trials
  - design
  - construction
  - interpretation