Pathology of the Male Reproductive System

Testis and Epididymis

Failure of Testis to Descend
- Testis are not always in scrotum at birth.
- Testes from in abdomen with kidneys
  - Migrate to scrotum
  - May get stuck in the inguinal canal
- Complications of not repairing
  - Sterile
  - Increased risk of testicular tumors later.
  - Inguinal hernia

Inflammation
- Bug
  - Ascending infection in most cases.
- GC
- Mumps
- TB
- Syphilis
- Autoimmune

Epididmitis
### Vascular Related
- Torsion
- Venous compression
- Hemorrhagic infarct
- Young men
- At night
- Very painful
- Can be reduced

### Scrotal Masses
- Testicular
  - Tumors (solid)
- Epididymal
  - Inflammatory (rubor, dolor, calor...)
- Peritesticular
  - Hernia
  - Hydrocele (cystic, transilluminates)
  - Vascular in nature

### Testicular Tumors
- Most are malignant
- Excellent results with treatment.
- Must look for ‘markers’ before removal
- Germ line (actual reproductive cells)
  - Seminoma
  - Embryonal
  - Choriocarcinoma
  - Mixed pattern
- Non-germ line
  - Specialized supportive cells
    - Leydig, may be hormonally active

### Tumor Markers
- Some tumors produce agents measurable in the blood.
  - Embryonic tissue markers
  - Beta-HCG
    - Placental marker
    - We measure this in pregnancy tests
  - Alpha-feto protein
    - Marker associated with embryonic gut

### Seminoma
- Most common type
- Yong men
- Curable
- Arises from sperm producing cells
- Several histologic types.
- Lymphocytes
- No markers
**Seminoma**
- Little fried egg looking cells.
- Lymphocytes
- No production of Bet-HCG or Alpha-fetoprotein

**Embryonal Carcinoma**
- Aggressive tumor
- 20-30 years
- Areas of hemorrhage and necrosis
- Two histologically distinct cell types.
- Markers +/-
- Lance Armstrong

**Embryonal Ca**
- Two tissue types
  - Stroma
  - Glands
- Metastasizes widely
- Markers +/-

**Choriocarcinoma**
- Placental elements
  - Synciotrophoblasts
  - Make Beta-HCG
- Typically part of a 'mixed lineage' tumor.
- Highly aggressive
- This element spreads early.

**Teratoma**
- Aggressively malignant
- Three germ lines
  - Ectoderm
  - Endoderm
  - Mesoderm
- Markers +/-
Leydig Cell Tumor

- One of several so-called ‘specialized stromal tumors.
- Non-germ line
- Benign generally
- Hormonally active
  - Androgens
  - Estrogens
    - Gynecomastia
  - Sometimes even corticosteroids

Hydrocele

- Fluid filled scrotal cyst.
- Benign
- Often with inguinal hernia
- Transilluminates
- Fluid will recollect if aspirated.
- Can be large

Prostatic Disease

- Acute bacterial
  - Ascending
  - E. coli
- Chronic bacterial
  - Low back pain
  - Dysuria
  - Suprapubic pain
  - Common bugs
- 'Abacterial
  - Chlamydia

Prostatitis

- Acute bacterial
- Ascending
- E. coli
- Chronic bacterial
- Low back pain
- Dysuria
- Suprapubic pain
- Common bugs
- 'Abacterial
- Chlamydia
Benign Prostatic Hyperplasia
- Very common
- Androgen mediated growth (DHT).
- Central zone proliferates
  - Stroma &
  - Glands
- Minimal if any increased cancer risk

Benign Prostatic Hyperplasia
- Nodular growth pattern
- Some chronic inflammation
- Glands always have a double layer of epithelium
  - Columnar &
  - Reserve layer

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Prostate Cancer
- Very common
- Blacks &
- Whites
- Rare in Asians
- Incidence increases with age.
- Peripheral zone
- PSA
- Family history

Prostate Cancer
- Adenocarcinoma
- Single layer of epithelium
- Gland-within-gland
- LN and Bone mets
  - Osteoblastic &
  - Osteolytic
- Treatment
  - Surgery &
  - Hormone manipulation

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Staging Prostate Cancer

Bone Metastases
- Spinal mets ->
- Painful
- May cause lots of reactive bone growth at the site of the met
  - Osteoblastic
  - May cause bone destruction
  - Osteolytic

Pathology of the Penis

Congenital Abnormalities
- Hypospadius
  - Urethral opening on ventral surface of penis.
- Epispadius
  - Urethral opening on dorsal surface of penis.
- Both associated with undescended testis

Circumcision, Yes or No
- Maybe helpful in a small number.
- In previous years it did make a difference.
- Phimosis
  - Orifice of the prepuce is too small.
  - Paraphimosis, inflammation and constriction leads to urinary problems.
  - ? Risk of cancer
Penile Tumors

- Papillomas
- HPV
  - Some are dangerous serotypes.
  - Cause unregulated epithelial growth

Papilloma

Squamous Carcinoma

- In situ
- Invasive
- Ulcerative
- HPV
  - 16
  - 18
- Regional lymph nodes.
- Metastasizes widely.

Sexually Transmitted Diseases

- HPV
- Hepatitis B
- Syphilis
- Gonorrhea
- HIV
- Chlamydia
**Gonorrhea**
- *Neisseria gonorrhoea*
  - Gram negative
  - Diplococcus
  - Mucosa
  - Acute inflammation!
  - Scarring
  - Sterility
  - Epididymitis

**Syphilis**
- *Treponema pallidum*
  - Spirochete
  - Arteriole is target
  - Vasculitis
  - Three stages
    - Primary: chancre
    - Secondary: rash
    - Tertiary: systemic
    - CNS
    - Aorta
  - Congenital

**Treponema pallidum**
- Spirochete
- Infects arterioles
  - Destroys them
- Rash
- Vasovasorum of aorta
- Can’t culture
- Serology
  - VDRL
  - Specific antibodies

**Secondary Syphilis**

**Tertiary Syphilis**
Congenital Syphilis

- Infected during pregnancy
- Third trimester
- Virtually all systems involved
- Periosteal involvement leads to many skeletal deformities

AIDS

- Human immunodeficiency virus
- Several strains
- T-cells infected
- Antibody regulation
- Tumor and cell mediated response

HIV

- Decreased response to double antigens
- Increased lymphocyte incidence
- Decreased helper T-cells
- Increased destruction of T-cells
- Diminished cytotoxic ability

Primary infection
- Acute HIV syndrome
- Wide dissemination of virus
- Seeding of lymphoid organs
- Constitutional symptoms
- Opportunistic diseases
- Death

Graph showing HIV progression over time.