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Benign and Malignant Diseases of the Testis and Scrotum

Gary J Faerber, MD
Associate Professor, Department of Urology
Physical Exam

• **Palpation**- use two hands to palpate the scrotal contents
• **Transillumination**- can aid in distinguishing solid from cystic masses
• **Identify**- Testis
  Epididymis
  Vas deferens
  Spermatic cord
CONDUCTING THE EXAMINATION

PALPATION

TRANSILLUMINATION
Male Genitourinary Exam: Scrotal Mass

- Transillumination
Testicular Cancer

• **Epidemiology**
  – Most common solid neoplasm in men <35 yrs of age
  – 1-2% of all neoplasms
  – Highest incidence Caucasian > Asians > African-American
Testicular Cancer-Risk Factors

- **Race**
- **Age:** Highest risk ages 20-40
- **Previous Testis cancer:** 2-3% risk of development of cancer in contralateral testis
- **Cryptorchidism:** 50 times more likely to develop cancer in an UDT. The more undescended the testis the higher the risk
- **Male Infertility:** More likely to have testis cancer
INITIAL SIGNS AND SYMPTOMS

- Mass or swelling: 65%
- Pain: 9%
- Mass and Pain: 9%
- Trauma: 7%
- Metastases: 5%
- Other: 5%
Evaluation

• **Physical Exam:** The BEST diagnostic tool

• **Scrotal Ultrasound:** Can be used to corroborate PE findings or clarify ambiguous exam

• **Serum Markers:**
  
  AFP (alpha feto-protein),
  Beta-HCG (Human chorionic gonadotropin)
Evaluation

Remember:

A mass in the testis is a tumor unless proven otherwise

A testicular mass warrants surgical exploration.
Testicular Neoplasm: Initial Treatment

- **Orchiectomy**: This is completed through an inguinal approach.
- **Staging Studies**
  - CT scan
  - CXR
  - Tumor markers: taken preoperatively and post-operatively
Tumor Markers and Testicular Neoplasm

- **Elevated HCG:** Choriocarcinoma, embryonal, occasionally seminoma (5-10%)

- **Elevated AFP:** Yolk sac, pure embryonal, teratocarcinoma. AFP is never elevated in a pure seminoma
Staging of Germ Cell Neoplasms

- **A**: Confined to the testis
- **B**: B1: microscopic spread or nodes < 2 cm in size and < 6 nodes
  
  B2: >6 nodes, 2-6 cm in size
  
  B3 >6 nodes > 6 cm

- **C**: Nodal spread beyond retroperitoneum
- **D**: Other solid organs, i.e., lungs, brain, liver, etc.
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Therapy for Seminoma

- Stage A, B: Radical orchiectomy
  Observation with CT scan, serum markers
  or
  External radiation

95-100% cure
Therapy for Seminoma

- Stage B2 or C: Radical orchiectomy
  Chemotherapy

>85% survival
Therapy for NSGCT

- Stage A: Radical orchiectomy
  - Chemotherapy
  - or
  - Close observation

>85% survival
Therapy for NSGCT

• Stage A: Radical orchiectomy

  - Chemotherapy
  - or
  - Close observation
  - or
  - Retroperitoneal lymph node dissection

>85% survival
Therapy for NSGCT

- Stage B1, B2: Radical orchiectomy

  Chemotherapy

  or

  Retroperitoneal lymph node dissection

>70% survival
Therapy for NSGCT

- Stage B3, C, D: Radical orchiectomy

Chemotherapy

>40-50% survival
Testicular Torsion

- Most commonly seen in males ages 12-18 yrs. BUT IT CAN OCCUR AT ANY AGE
- Twisting of the spermatic cord causes testicular ischemia. Twisting of >720 results in complete testicular artery occlusion.
- Ischemia time of >6 hrs usually results in testicular demise.
Testicular Torsion

• TESTICULAR TORSION IS A UROLOGIC EMERGENCY AND REQUIRES SURGICAL EXPLORATION!

• TESTICULAR TORSION IS A UROLOGIC EMERGENCY AND REQUIRES SURGICAL EXPLORATION!
Testicular Torsion: Presentation

• Acute pain: Usually not associated with trauma to testis.
  “I was sound asleep and the pain woke me”
• Nausea, vomiting
• Low-grade fever
Testicular Torsion: Presentation

- Physical exam: Epididymis anterior
- Horizontal lie to the testis
- Testis lying high in the scrotal sac
- Exquisite tenderness to palpation.
- Possible associated reactive hydrocele
Testicular Torsion: Differential Diagnosis

- Epididymitis
- Testicular tumor
- Orchitis
- Torsion of appendix testis
- Traumatic rupture of testis (testis fracture)
Male Genitourinary Exam:

- Blue dot sign
Testicular Torsion: Diagnostic Tests

- History and PE often are enough
- Nuclear testicular scan
  
or
- Doppler ultrasound
Testicular Torsion: Treatment

- Emergent surgical exploration:
  - If testis is viable then de-torse and perform bilateral orchidopexy

- If testis is not viable, then perform orchiectomy and perform contralateral orchidopexy.
Epididymitis/Orchitis

- Infection/Inflammation
  - Usually retrograde infection up the vas deferens
  - Sometimes can be due to systemic illness ie viral
  - Blood-borne infection, ie TB
Drawing of an acute epididymo-orchitis removed
Epididymitis/Orchitis

• Risk Factors
  – Sexual activity
  – Congenital anomalies
  – Bladder outlet obstruction (BPH)
  – Neurogenic bladder dysfunction
Epididymitis/Orchitis: Presentation

- Scrotal pain and swelling
- Voiding symptoms
- Fever
- PE: Scrotal swelling, hydrocele, erythema, pain on palpation (epididymal > testicular pain), urethral discharge
- Urinalysis: pyuria, bacteriuria
Epididymitis/Orchitis: Pathogens

• Age-dependent
  – Pediatric population: gm negative enteric organisms
  – Young adult: chlamydia, gonorrhea
  – Older adult: gm negative enterics
Epididymitis/Orchitis: Treatment

- Bug-dependent:
- Gm- enterics: SMX:TMP, quinolones
- STD’s: Tetracycline, Ceftriaxone, quinolones

- Bedrest, scrotal elevation
- *If symptoms worsen-suspect possible testicular abscess and get a scrotal ultrasound*
Benign Scrotal Masses

• Hydrocele
• Spermatocele
• Varicocele
• Hematocele
Male Genitourinary Exam: Scrotal Mass

- Transillumination
Male Genitourinary Exam: Scrotal Mass

• **Transillumination!**
Varicocele

- Abnormally dilated internal spermatic vein
- 10-15% of adult males have varicoceles
- 90% found on left
- 10% bilateral
- Usually asymptomatic, but occasionally may cause a heavy dull pain especially if men have been upright for long periods of time.
Spermatocele

- Rupture of epididymal ducts
- Filled with sperm
- Usually asymptomatic
Case Study

• You are called to the ER to evaluate a 21 year old UM undergraduate student with “ball pain”
Case Study

• 21 yo with scrotal pain.
• What aspects of the history are important in this case?
Case Study

- 21 yo with scrotal pain.
- What ancillary tests would you like to perform?
- What would sway you one way or another about whether these tests need to be performed?
Case Study

• 21 yo with scrotal pain.
• What is your working diagnosis?
• What is the differential diagnosis
Case Study

• 21 yo with scrotal pain.

• Important aspects of the History
  – Acute onset, “woke him from a drunken sleep”
  – No recent sexual activity
  – Has had similar episodes in past
  – History of UDT
  – No voiding symptoms
Case Study

• 21 yo with scrotal pain.
• Important aspects of the Physical
  – Exquisite tenderness of testis>epididymis
  – Testis high-riding and more horizontal
  – Epididymis anterior
  – +/- Cremasteric reflex
Case Study

• 21 yo with scrotal pain.
• Important Test results
  – UA negative
Case Study

• What do you do now?