Below the Belt:
GU issues
in College age males

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Overview
- Review of Scrotal Anatomy
- Cases
- Discussion

It’s a sensitive subject…

They don’t grow on trees…

External Anatomy

Gross Anatomy – Male GU Tract
Case 1
- 18 year-old male, in for PE.
- Complaining of intermittent “heaviness” in the scrotum. Occasionally aches.
- Sexually Active. No other significant past medical history.
- Medications- none.
- No history of penile trauma.
- No fever.

Differential Diagnosis?

Physical Exam

Thoughts????

Varicocele
- Abnormal Dilatation of venous plexus of pampiniform.
- Most common correctable cause of male infertility.
- Much controversy regarding both etiology and treatment.
Varicocele - Epidemiology

- 10-15% of Male Adolescents
- Present in 20-40% of men seeking treatment for infertility.

Varicocele - Signs and Symptoms

- Incidentally found on scrotal exam in adolescents.
- Valsalva maneuver
- 90% Left sided.
- 33% Bilateral.
- Unilateral Right-sided Varicocele strongly suggests pathologic compression.

Varicocele - think ANATOMY!

- Proposed Etiologies:
  - ? Incompetent venous valves
  - ? Smooth muscle fiber defects of the tunica media of the left testicular veins.
  - ? Compression of Left Testicular vein between SMA and aorta ("nutcracker phenomenon")
  - ? Effect of adrenal catecholamines into Left renal vein from left adrenal vein → vasoconstriction

Varicocele - Pathophysiology

- Countercurrent heat exchange in pampiniform plexus.
- BILATERAL intra-testicular temperature elevation.
- ? Ipsilateral low oxygen content of testicle

  The result????

- Subsequent loss of testicular volume
- Sertoli cell dysfunction → Impaired spermatogenesis

Varicocele: Grading

- **Grade 0**: Subclinical. Not detectable on Physical exam
- **Grade 1**: Detected with Palpation. Present only with Valsalva Maneuver.
- **Grade 2**: Easily detected without Valsalva.
- **Grade 3**: Visible at a distance

Varicocele: Urologic Workup

- Ultrasound
- Semen analysis, but not recommended for under age 18 (no adolescent adjusted values exist)
- Preliminary data correlating increased FSH and LH with decreased sperm counts in Tanner V adolescents (Guarino, 2003)
Varicocele:
When to Refer???
- 20% volume discrepancy between testes
- Discomfort – (Pain or pressure)
- Documented decrease in viable sperm (adults)
- Grade 2 or 3 Varicocele

Varicocele: Treatment
- Ligation or embolization of spermatic veins
- Done through inguinal area (usually)
- Complications: Hydrocele, testicular atrophy, hematoma, injury to Vas deferens.

Varicocele: Prognosis
- 66-70% of adults have improved sperm viability
  - BUT, Pregnancy rate (in adults) only 30-41% post-surgery
- 80% adolescents have increased testicular size
- Recurrence = 5-16%
  - In adolescence, earlier treatment may lead to improved fertility.

Case 2
- 20 y.o. male- reading “Men’s Health” magazine
- “I found a lump”
- Painless
- Unsure how long it has been there...

Physical Exam
- Testicles 20ml bilaterally
- No growths noted on testes
- Posterior to right testicle- approximately 1 cm cystic outgrowth appreciated.

Thoughts????
- Differential Diagnosis?
- Workup?
Spermatocele

- Benign, cystic accumulation of sperm
- Incidental finding on U/S in 30% of men.
- ? Obstruction of epididymous → Proximal dilatation.

Spermatocele - Path

- Asymptomatic
- Found incidentally on self-exam
- Found in head of epididymus
- Posterior-lateral border of testis
- Can cause discomfort on exam
- May transilluminate
- Ultrasound 100% sensitivity

Spermatocele: Clinical Presentation

-Treatment or Referral?
  - If asymptomatic, DO NOTHING.
  - Refer to urology
    - for increasing pain or size of Spermatocele.
    - Symptomatic relief.
    - Spermatocelectomy vs. Sclerotherapy
  - Infected? --> Antibiotics for Epididymitis

Case 3

- 17 year-old freshman male, here for routine physical exam.
- No Physical complaints.
- Sexually active (oral sex) in the past.
- No current girlfriend.
Physical exam
- Bilateral enlargement of scrotal sack.
- Somewhat tense to palpation
- Transilluminates

Differential Diagnosis?

Hydrocele
- Collection of serous fluid caused by a defect in the tunica vaginalis.
- Three Types:
  1. Communicating
  2. Non-communicating
  3. Hydrocele of the cord.
- Look Anterior to testicle!!!

Again- Location, Location, Location!

Hydrocele in Adolescents & Young Adults
- Uncommon
- Infection: Epididymitis, Orchitis, TB, tropical infections (filariasis – *W. bancrofti*).
- Local injury, malignancy, radiotherapy.
- Chronic fluid accumulation
- Other risks: VP shunt, dialysis, renal transplant
- Uncommon.
  - (usually seen at 1-2 yrs old or >40 yrs)

Hydrocele
- Filariasis – *Wucheria Bancrofti* infection
Hydrocele - Clinical
- Asymptomatic
- Painless, enlarged scrotum
- Heaviness or fullness
- Occasionally, mild discomfort in inguinal area
- Obtain Sexual history, trauma, exercise habits
- History of Hernia

Hydrocele: Workup?
- History:
  - Systemic signs absent
  - Need to differentiate from hernia
    - No pain, no bowel sounds, no discoloration
  - Transillumination
  - CBC or ESR - inflammatory process
  - UA - detect pyuria
  - Ultrasound

Hydrocele - Ultrasound

Hydrocele: Treatment
- Surgical Excision
- Treatment of Underlying process

Case 4
- 22 year-old graduate student.
- Testicular pain x 1 day
- No known trauma to the area
- No Fever

Physical examination
- Left testicle
  - Hard structure attached to lateral aspect of testicle (separate from epididymus)
  - Non-fluctuant
  - Markedly tender to palpation
Thoughts?
- Differential Diagnosis?
- Workup?

Ultrasound

Testicular Cancer

- Most common Solid tumor in 15-35 year-old males
- Risk increases in 30s.

Seminoma: Epidemiology
- Most common Solid tumor in 15-35 year-old males
- Risk increases in 30s.

- Seminoma Trivia
  - 7500 Cases diagnosed annually in U.S.
  - Rates highest in N. American, Scandinavian and European Caucasians.
  - Caucasian:African ratio 5:1, 40:1

Testicular Cancer: Clinical
- Most commonly painless testicular mass
- Self-examination?
- CAN present as testicular pain (45%) or fullness
- LN spread→back/abdominal discomfort

Testicular Cancer: Clinical
- Palpation of testicle mass.
- Transillumination???
  - (Subfertile semen analysis)
- Abdominal Exam (poss LN mets)
- Careful lung, liver, CNS exam to rule-out mets.
Testicular Cancer: Germ Cell Tumors

- 95% of testicular cancer
- Seminoma, teratoma, choriocarcinoma
- Seminoma 50% G.C.T.
- Overall Survival > 90%

Seminoma: Pathophysiology

- Arise from germinal epithelium of seminiferous cells.
- Likely can arise from any spermatocytic structure

Seminoma: Pathology

Seminoma: Risks

- ? Sibling clustering
- Klinefelter syndrome
- ? HIV infection, mumps, immunosuppression, orchitis
- Prior Testicular Cancer (cumulative 25 year risk=3.6%)

Testicular Cancer: Cryptorchidism

- Associated with 7-10% of Testicular Cancer
- 25% of tumors arise from CONTRALATERAL testicle!
- Risk Related to degree of maldescension
  - Intra-inguinal 1/80
  - Intra-abdominal 1/20

Seminoma: Metastatic Disease

- 85% cases confined to testes (stage I)
- Lymph node drainage retroperitoneum (stage II)
- RARELY (<5%) spreads through blood to lung, bone, liver, brain (Stage III)
**Testicular Cancer: Evaluation**
- CXR
- Abdominal CT: Looking for retroperitoneal LNs

**Testicular Cancer Trivia:**
- **Other Markers**
  - B-human chorionic gonadotropin
    - Typically made by placenta
    - Elevated in 22% seminoma patients
  - Alfa-Fetoprotein
    - "fetal albumin"
    - Indicates a "non-seminomatous" tumor.
  - LDH - reflects tumor burden

**Testicular Cancer: Treatment**
- Radical **Inguinal** Orchiectomy.

**Seminoma: Treatment**
- After Orchiectomy:
  - Stage I-IIa,b: Local Radiotherapy
  - Stage IIc-III: Adjuvant Chemotherapy
    - Cisplatin, Etoposide, Bleomycin

**Seminoma: Prognosis**
- Stage I: 4% relapse
- Stage IIa: 10% relapse
  - Subsequent treatment cures>90%
  - 99% cure ultimately
- Stage III: 70-80% cure
- Stage IV: 20-30% cure

**Case 5**
- 20 year-old male, complaining of blood in semen.
- UA 3+ blood, otherwise normal
- No fevers.
- Ultrasound normal.
- Exam reveals small abrasion on shaft of penis. Testicular exam normal
Thoughts?

Additional information

- Revealed history of bipolar illness.
  - Also, decreased sleep
  - Racing thoughts
  - Elated mood
  - Hyperfunctioning
  - Pressured speech

- Admits to masturbating 5-7 times/day over the past few weeks.

“Penile Overuse Injury”

- Sub-acute trauma
- Most common cause of hematuria/hematospermia in adolescents

- Can Cause:
  - Bleeding
  - Phlebitis
  - Abrasions
  - Testicular Pain
  - Peyronie’s Syndrome - extreme

Peyronie’s Syndrome

- Fibrous Plaque in the shaft of penis.
- Psychological and physical impairments.
- Various medical and surgical options.

Speaking of Masturbation???

- Role of practitioner in counseling around masturbation?
- When to ask about it?
- How much is too much???

Case 6

- 18 year-old male freshman, complaining about dull ache in testicles since yesterday.
- Symptoms began after a long session (2 hours) of “heavy petting”
- No fever, no other symptoms.
- Recently started on Sertraline 50mg
- Examination reveals tender bilateral testicles.
- Ultrasound normal.
Thoughts?

**“Blue Balls”**

- Universally considered, NO DATA!
- Mechanism: Prolonged sexual arousal leading to:
  - Vasocongestion of the testicles and prostate (blood and lymphatic fluid)
  - Lactic acid accumulation in cremaster muscles

- Treatment = Ejaculation
- NSAIDs
- Area for future research.

**Audience Discussion**

Note: Slides to be posted on ACHA web site.