The Red Hot Scrotum

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Disclosures

• PI on multicenter clinical trial of Botox for neurogenic bladder
  ○ Sponsor Allergan
Acute Scrotum

This is not one of them.

Practical approach to the Evaluation
Treatment
For the child with an acute scrotum

Clinical Experience
Pet Peeves
Why not a cookbook approach

• Literature is a grab bag of numbers
  o Selection bias
  o Age bias
  o Not everyone is explored
    ▪ Diagnosis is assumed

  o Tremendous overlap in presentation

• High cost for getting it wrong
  o Loss of an organ
  o One of the most common torts
    ▪ Urologists and Primary Care
  o Expensive mistake
Challenge

- Need to distinguish between multiple competing diagnosis that present very similarly

- Tools are limited
  - Ultrasound - most accurate but not perfect
  - History, Physical and Labs are all very non-specific

- High cost to getting it wrong
Acute Scrotum-Differential Diagnosis

• Testicular Torsion
• Torsion of the Appendix Testis
• Epididymitis
• Henoch-Schonlein Purpura
• Trauma
• Incarcerated Inguinal Hernia
• Varicocele
• Hydrocele
• Lymphadema
• Spermatocèle
• Testis tumor
• Scrotal Cellulitis
• Orchitis- mumps, viral
• Orchalgia
• Referred pain- retrocecal appendicitis, prostatitis
• Intermittent Torsion
Acute Scrotum

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a possible referral for you
Today at 12:07 PM

Hi Andy,
I have a patient, 7 year old male who is s/p a recent "acute right epididymal orchitis" diagnosed by the ER at Little Company of Mary. His ultrasound read "positive flow to both testicles, a bulky right epidymal cyst, increased vascularity right testicle and right epididymis, moderate right hydrocele and right scrotal thickening." UA was negative. He was started on Bactrim and improved.
Is there any follow up that you would recommend?
Thanks so much,
Rachel
Acute Scrotum-Typical Scenario

- Family calls, child is having acute testicular pain
- No fever, nausea, vomiting, trauma or dysuria
- Otherwise healthy
  - No prior urologic history

- Send to ED/your office/specialist office
- Exam mild pain when touched
- Comfortable when lying still

- Obtain Ultrasound
  - Normal flow in testes
  - Increased flow in epididymis
  - Called epididymitis

- What’s your diagnosis?
• Do you think an otherwise healthy pre-pubertal child with a normal urine has epididymo-orchitis?

  ◦ What organism?

  ◦ Do you treat with antibiotics?
    ▪ Which antibiotic?

• What else can it be?

• How to differentiate
Acute Scrotum

• Torsion of the Appendix Testis- 60-70%

• Testicular Torsion 10-15% of acute scrotum
  ○ 1/4000 age <25

• Epididymitis 5-10%
Rule out Epididymitis

• Epididymitis is very common post-pubertal patients
  ○ Most epididymitis is due to an STI
  ○ Most common cause of pain in adolescent and adults
  ○ But very rare in pre-pubertal patients

• So for me to believe its epididymitis I need a good story
  ○ A reason this child is at risk

• Fever
• UTI symptoms
  ○ At least a positive UA
• Congenital anomaly
  ○ Neurogenic bladder
  ○ Hypospadias
  ○ Ectopic ureter
• Recent instrumentation
• Urologic history
  ○ Urethral stricture
Rule out Epididymitis

• Non STI causes
  o UTI bugs- E coli, Klebsiella
  o Specific infections- Mumps (very rare)
  o Reactions to infections- mycoplasm, viruses
    ▪ Resolve spontaneously

• Only small percent culture proven 4-9%
  o Most studies do not explore everyone so if the ultrasound shows epididymal inflammation and they get better they assume is was epididymitis
Rule out Epididymitis

• Physical findings
  o Enlarged very tender and indurated epididymis
  o Testis enlarged and tender
  o Normal position and orientation
  o Scrotal erythema and edema
  o (+/-) Cremasteric reflex intact

• Positive urine
• Often febrile

• History and ultrasound usually not able to distinguish from torsion of appendix testis
Epididymitis vs Torsion of Appendix testis

• Torsion of Appendix testis

• History
  o Frequently history of mild trauma

• Physical exam
  o No fever
  o Normal urine
  o Epididymis soft without induration
  o Testis usually not very tender
  o Exquisite tenderness at a single spot in the area of the head of testis and epididymis

  o Blue dot sign- rarely seen but pathognomonic
  o Ultrasound with normal flow in testis and increased flow in epididymis
Torsion of appendix testis

- Often physical exam so clear that ultrasound is not necessary
  - Pain only when touched
  - Mild external changes
  - Discrete tenderness at palpable nubbin
  - Blue dot sign
Appendix testis can be multiple
Blue dot sign
Torsion of Appendix Testis vs. Epididymitis

• If exam equivocal
  ○ Fever, positive urine, or good reason -> epididymitis
  ○ No story, localized pain and not torsion -> appendix testis
Treatment

- Epididymitis
  - Antibiotics- 3 weeks
    - Children- Bactrim
    - Adolescents/Adults- STI treatment- Ceftiaxone and Doxycycline
      - Chlamydia and Gonorrhea

- Torsion of Appendix testis
  - Rest
  - Anti-inflammatories
  - Until 100% better
What about Torsion

• Testicular torsion
  ○ Diagnosis - you do not need to make a diagnosis you just need to decide if you want to explore
    ▪ OK to have occasional negative explorations
  ○ Ultrasound with no flow or diminished flow
  ○ Cannot be sure it is one of the other two
  ○ Clinical suspicion

• The diagnosis is torsion until proven otherwise
Clinical suspicion

- Factors that increase suspicion
  - Nausea and vomiting - most important
  - Severe discomfort
    - These boys cannot get comfortable
  - Pain radiating to groin or abdomen
  - Elevated testis
  - Loss of cremasteric reflex
  - Testis itself is hard and enlarged
  - Testis is very tender throughout
  - Reactive hydrocele
  - Scrotal discoloration
Testicular Torsion

• But there can be great overlap between conditions
• A dead testis does not hurt as much as a dying testis
• Some boys will be comfortable until you touch it

• So must always start with the idea it is torsion until you are convinced it is not.
A Tale of Two Testes

• Patient A
  • 13 yo boy
  • Woke up with pain the day before
  • Seen in Mexico, received a shot (unclear if Abx or pain med)
  • Still in pain when seen almost 30 hours later
    - Comfortable standing
    - Pain when you touch it
    - No nausea, vomiting, fever
    - Normal UA

• Ultrasound:
  - Enlarged hyperemic epididymis on the right.
  - Moderate right-sided hydrocele
  - The right testicle appears enlarged with diminished blood flow compared to the left.

• Differential possibilities include epididymitis or intermittent torsion.
A Tale of Two Testes

• Patient B
  ○ 17 yo boy with acute pain that morning
  ○ *Seen at 6 hours*, still in pain but primarily when touched, comfortable at rest
  ○ No nausea, vomiting, fever or dysuria
  ○ Testis very enlarged, hard and tender
  ○ Scrotum very erythematous

• Ultrasound: The findings are strongly suspect for testicular torsion. The etiology of the swollen and heterogeneous epididymis on the left may also represent partial torsion with an element of inflammation
Diagnosis

• Patient A

• Patient B
Appearance
Ultrasound A
Ultrasound B

SAG LEFT TESTIS MEDIAL

SAG LEFT TESTIS MEDIAL
Operative findings: A

540° rotation
Operative Findings: B

720° rotation
This is why it is hard

• Patient A
  o 30 hour history of pain, questionable exam and flow on US
  o Could easily talk yourself into epididymitis
  o Significant torsion but salvageable

• Patient B
  o 6 hours of pain
  o Pain only when touched
  o Significant torsion- unsalvageable testis

• It torsion until proven otherwise
Manual Detorsion

• Manual detorsion is often attempted in the ED
  ◦ This impulse should be strongly repressed

• The only role for manual detorsion is after diagnosis made if there is going to be a significant delay in getting to the OR

• Not a substitute for surgical repair
• Is very difficult to know if completely detorsed
• May create torsion

• May so muddy the diagnosis that we feel the need to explore when it may not have been necessary
Prosthesis

• Classical teaching is to delay placement
  o Risk of infection
  o Age of patient
    ▪ Size of scrotum
    ▪ Size of prosthesis
  o Unknown if desired

• Some groups are now advocating for immediate placement with good results in adolescents with a mature contralateral testes
Intermittent torsion

• Uncommon condition where the testis can experience torsion and spontaneous detorsion.
• Untreated has a significant risk for developing a more definitive torsion.
• Unfortunately a diagnosis of exclusion
  o Unless witnessed there is no effective test for risk of torsion
• Treatment with bilateral orchiopexy
• But only 50% ‘success’ in preventing further painful episodes
  o But does take torsion off the table.
Recurrent torsion

• Can a testicle that has been fixed have a recurrent episode of torsion?

• Unfortunately yes
  - Because operation not done properly
  - Usually these testes are lost because of delay in diagnosis

• Even if prior repair in the clinical setting of significant pain still need to rule out torsion
Intermittent pain

- Frequent brief episodes of discomfort is not torsion
- Usually referred pain or other not emergent process
  - Dysfunctional voiding
  - Prostatitis
  - Orchalgia

- Do not need to go to ED
- Voiding history/voiding diary
A Practical Approach

• **Sustained testicular pain** warrant investigation
  ○ Whether that is ED, Your Office, My office or radiology will depend on resources available to you, time of day, level of suspicion.
  ○ But should be seen emergently
    ▪ You will be held responsible for any delay
  ○ Hard part is convincing the family this is an emergency

• Evaluation
  ○ History/Physical
    ▪ N/V, radiation of pain, reason for infection, trauma
    ▪ Absent cremasteric reflex, location of pain, position of testis
  ○ UA
  ○ Ultrasound
Practical approach

• Starting point is it is torsion until proven otherwise
  o Rule out epididymitis
    ▪ Give me a reason
  o Remember torsion of appendix testis
    ▪ Ultrasound with normal flow to testis and increased flow to epididymis
    ▪ Localized pain
  o If the blood flow to testis is abnormal
    ▪ Absent or diminished then needs exploration

• If at all uncertain than should explore

• The ultrasound is only there to support your clinical suspicion not make a diagnosis
Thank you