AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
SCIENTIFIC ASSEMBLY
1999

The Acute Scrotum: The Emergency Department Approach

Acute scrotal pain is a very difficult complaint to evaluate. A stepwise approach to the assessment of the acute scrotum must be used to avoid missing testicular torsion. The lecturer will discuss the differential diagnosis evaluation and management of the patient who presents with acute onset of scrotal pain.

- Describe the assessment of a patient who presents with acute scrotal pain.
- Discuss the differential diagnosis (serious or benign) of a patient with acute scrotal pain.
- Discuss the management of each diagnosis, including the criteria for an urologic consultation.

WE-121
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FACULTY

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Acute Scrotal Pain:

The Emergency Department Approach

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Acute Scrotal Pain

- Differential Diagnosis
  - Testicular Torsion (~20%)
  - Epididymitis(~35%)
  - Torsion of testicular append.&-35%)
  - Orchitis
  - Testicular Tumor
  - Hydrocele
  - Hernia
  - Trauma

Testicle: Development

- 28th wk: Descent through inguinal canal
- 32nd wk: Testes enters scrotum
  - Obliteration of Processus
  - Tunica invests Testis (except posteriorly)

Testicular Torsion

- Once Thought to be most common cause of scrotal pain (age<30yo)
- Peak incidence: lyr old & puberty
- Average age: 16yrs
- Salvageability: -50%

Testicular Torsion

- Etiology
  - "Bell- clapper" deformity
  - Undescended testis
  - Genetic predisposition

Testicular Torsion

- Pathophysiology
  - Obstruction of venous return
  - Thrombosis of vein
  - Arterial thrombosis

7 An "Interesting" cause of Testicular Torsion...

- **"The great Imitator"**
  - **Testicular Torsion secondary to Taser gun**
    - Ordog GJ, et al: Electronic gun (taser) injuries. Ann Emerg Med 1987.

8 Testicular Torsion

- Pathogenesis:
  - Degree of Obstruction : Degree of Rotation
  - Duration of vascular obstruction

9 Testicular Torsion

- "TIME IS OF THE ESSENCE!"
  - Detorsion < 6hrs: 80% survival
  - Detorsion > 12hrs: 20% survival
  - Detorsion > 24hrs: 0% survival

10 Testicular Torsion has a deleterious effect on the contralateral testis

- Kolettis, et al: Acute spermatic cord torsion alters the microcirculation of the contralateral testis. J Urol 1996.
- Akgur FM, et al: Ipsilateral and Contralateral testicular biochemical changes after unilateral testicular torsion and detorsion. Urology 1994.

11 Testicular Torsion

- Clinical Features
  - Acute onset
  - Nausea&Vomiting
  - Occurs during Exertion or Sleep(50%)
  - Absence of urinary symptoms

12 Intermittent Testicular Torsion

- Severe testicular pain with spontaneous resolution
  - 40% of patients with torsion
  - Horizontal lie of testicle

No damage from subacute episodes

13 Testicular Torsion

- Physical findings
  - Swollen, firm, tender hemiscrotum
    - Left > right
    - Size of scrotal mass not useful

- High riding testis with transverse lie
- Lack of findings in children
- Loss of cremasteric reflex

14 Cremasteric Reflex

- Stroking of **inner thigh : Brisk upward deflection of testicle**
- Twisted muscle dysfunctional
- Positive Reflex: Unlikely torsion
  - False Positive: Wrinkling of skin
  - False Negative: Lack of reflex

15 Testicular Torsion & the "Diagnostic Workup"

- **"Castration by procrastination"**
  - Dr. Doug Lindsay
  - University of Arizona

16 Testicular Torsion

- Ancillary studies
  - UA: negative
  - CBC: negative leukocytosis

17 Testicular Torsion

- **Radioisotope scan**
  - Torsion: Absence of blood flow
  - Epididymitis: Hypervascularity
    - Sensitivity: 80-100%
    - Specificity: 89-100%

18 Limitations of Nuclear Scintigraphy

- Limited Availability
  - Isotope requires time for preparation
- No anatomic information is provided
- Inability to differentiate Epididymitis from Torsion of Testicular Appendage

19 Testicular Torsion

- Color Doppler Ultrasound
  - Sensitivity: 86-100%
  - Specificity: 100%

20 Indications for Doppler Ultrasound

- Scrotal pain w/equivocal features
  - No clinical findings of torsion
  - No history of previous episodes separated by pain free intervals
  - No pathognomonic findings of another Dx
  - No clinical diagnosis of epididymitis

- Scrotal trauma

21 Doppler Ultrasonic Stethoscope
- Use to confirm epididymitis in patients who are thought to have epididymitis based upon clinical impression
- "Just another piece of data!"
- Don't use in children!

Doppler ultrasonic stethoscope
- 10-mhz doppler
- Spermatic Cord Nerve Block
- Displace scrotal skin (gel)
- Probe in center of testicle (caudal orientation)
- Compare with contralateral testide

Spermatic Cord Nerve Block
- Prep skin at external ring
- Grasp cord between thumb & forefinger
- Directly inject 10cc of 1% lidocaine

Doppler Ultrasonic Stethoscope
- Decreased or absent flow: Torsion
- Increased flow:
  - Epididymitis
  - False Positive

Doppler Ultrasonic Stethoscope
- False positives
  - Detection of pulse above testicle
    - Inadequate caudal orientation
  - Detection of pulse from finger
    - Liquefied testicle
  - Inflamed scrotal skin
    - Inadequate compression

26 Doppler Ultrasonic Stethascope
- Compare to contralateral testicle
- Funicular Compress& Test:
  - Compress on ***spermatic cord***
    - Decreased signal: signal from testicle
    - No change: signal from inflamed scrotal tissue

27 Doppler Ultrasonic Stethoscope

- **False Negatives**
  - Cord inadvertently compressed by examiner
  - Hydrocele

28 Testicular Torsion

- Therapy
  - **Definitive Surgical Care**
  - Testicular Manipulation
    - A 'temporizing" technique
  - Attempt while preparing for surgery
    - The earlier the presentation, the more likely success

29 Manual Detorsion of the Testes

- Torsion
  - Internal Rotation: (90%)
  - Average # of twists: (360 X 2)
- Rotation of testes *outward*
  - Success: Decreased pain; Normal position
  - Confirm with doppler
  - Continue to OR

30 When not to Believe your Urologist

- "He's too far out now to do anything about it"
  - There are *no* clinical or laboratory parameters to judge accurately the degree or duration of ischemia

31 When not to Believe your Urologist

- "He's too old to have a torsion"
  - Melekos MD: Testicular torsion in a 59-year-old man. J Urol 19%.
  - Alfert HJ,et al: Testicular torsion in a 62-year old man. J Urol 1987.

32 When *not* to Believe your Urologist

- "It's bilateral! It can't be testicular torsion!"
  - Kossow AS: Bilateral synchronous testicular torsion: a case report. J Urol 1994.
  - Benge BN,et al: Acute bilateral testicular torsion in the adolescent. J Urol 1992.

33 When ***not*** to Believe your Urologist

- "It can't be a torsion-I fixed it the last time!"

- Chinegwundoh FI: Acute testicular torsion following testicular fixation. Br J Urol 1995.
- Shanbhogue LK,et al: Testicular torsion after orchidopexy. Br J Surg 1988.

34 ☐ *Misdiagnosis* of Testicular Torsion

. Nsouli I, et al: Perforated appendicitis presenting as a torsion of spermatic cord. Urology 1986.

- Lin YI, et al: Acute pancreatitis masquerading as testicular torsion Am J Emerg Med 1996.
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35 ☐ Misdiagnosis of Testicular Torsion

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- Bristow DL, et al: Ventriculoperitoneal (VP) shunt migration causing an acute scrotum...J Pediatr Surg 1978.

36 ☐ For you hyperbaric folks...

- Kolski JM, et al: Effect of hyperbaric oxygen therapy cm testicular ischemia-reperfusion injury. J Urol 1998
  - "results suggest a potential benefit..."

37 Epididymitis

- Etiology
  - Most common cause of scrotal swelling
  - 600,00 ED visits per year
    - Russia's "secret weapon"

38 Epididymitis

- Etiology
  - Sexually active men
    - C. trachomatis (75%)
    - . N. gonorrhoeae (25%)
      - Retrograde ascent of urethral pathogens
  - Older population
    - E. Coli
      - Underlying urologic pathology
      GU tract manipulation

39 ☐ Epididymitis

- Uncommon Etiologies
  - Hematogenous spread
    - Syphillis (secondary stage)
    - Tuberculous
    - Blastomycosis
    - Meningococcus

40 3 Epididymitis

- Pathogenesis
  - Cellular inflammation in Vas Deferens
  - Descent to lower pole of Epididymis
  - Testicle swelling due to congestion & inflammation

41 Epididymitis

- Clinical Features
  - Gradual onset
  - UTI symptoms
  - Average age: 25yrs
  - Fever is common(95%)
    - Avg.Temp 100.4F (38C)
    - 2% of torsion have law grade fever

42 Epididymitis

- Physical findings
  - Pain in scrotum and groin
  - Epididymal swelling
  - Epididymis may be indistinguishable from testis
  - Scrotal skin erythematous and warm
  - Phren's sign

43 Epididymitis

- Ancillary testing
  - CBC: leukocytosis is suggestive
  - UA: suggestive(50%)
  - Urethral swab
  - Color Doppler Ultrasound: NL

44 Diagnostic Criteria for Epididymitis

- Gradual onset of pain
- Dysuria,Discharge,or recent instrumentation
- History of genitourinary abnormality
  - LJTI, neurogenic bladder, hypospadias, etc.
- Fever >101F (38.3C)
- Tenderness & induration at epididymis
- Abnormal UA (10 WBC or RBC/HPF)

45 Epididymitis

- Antibacterial Therapy
  - Sexually acquired
    - GC & Chlamydia coverage
    - From Ceftriaxone 250mgIM & Doxy
    - 100mg po bid x 14 days to:
      - Ofloxacin 300mgpo x 10 days

- Nonsexually acquired
  - Oflox, Bactrim, Cipro (10 day course)

46 Epididymitis

- Supportive therapy
  - Bed rest
  - scrotal support
  - Analgesics
  - Sitz baths
  - Ice

47 **Sue, et. al: Testicular Infarction in a Patient with Epididymitis.** Academic Emergency Medicine, Nov. 1998.

- Edema of spermatic cord leads to arterial compression
- Less **than** 1% of Cases
- Bacterial toxins lead to vascular thrombosis

48 Clinical clues to infarction in Epididymitis

- No resolution despite therapy
- Acute pain in resolving patient
- Recurrent Epididymitis
- Tenderness and palpable thickening of spermatic cord

49 Torsion of Testicular Appendage

- Normal vestigial appendages
- Appendages can undergo torsion leading to painful mass
- **Sxs usually less severe than** torsion
- Transillumination: blue/ black dot
- Excision Vs. Observation
  - Calcification and degeneration is the rule

50 Orchitis

- Infection involving Testis only
  - *Rare without preceding epididymitis*
  - Pyogenic Bacterial/ Viral Orchitis

51 Orchitis

- **Mumps**
  - 20-30% of postpubertal boys with mumps
    - Testicular pain 46 days s/p parotitis
    - Unilateral (70%)
    - Supportive therapy w/ resolution 4-5 days
    - Atrophy (50%)/ Infertility (30%)

52 Testicular Tumor

- Most common malignancy in young males
- Painless/ Gradual onset
  - Sudden pain due to hemorrhage(10%)
- Intratesticular mass
- UA: ■♏♑♂
- Misdiagnosed as Epididymitis(6-16%)

53 Variocele

- Common cause of painless swelling
- Poor drainage pampiniform plexus
- Dilated veins superior &posterior
- Conservative therapy

54 Hydrocele

- Fluid in the tunica vaginalis of the testis
- ■♑♋♦♏■♦processus vaginalis
- Communication with peritoneal cavity
- Cystic mass surrounding testis
- Increased during day, decreased with recumbency

55 Hydrocele

- <6months: common, spont. resolution
- >6months: patent processus, surgery
- Adult: secondary to acute scrotal or intraperitoneal process

56 Inguinal Hernia

- Failure of processus to obliterate
- Present as scrotal mass
  - Non painful fullness in inguinal area
  - Exam reveals testis separate from hernia
  - Some transiluminate
- R/O incarceration (5-10%)
  - Should be easily reducible
  - Inguinal herniopathy

57 Trauma

- Contusion of scrotum
- Fracture/Rupture of testicle
- Hx of trauma to the-testicle may be present in torsion (-20%)
- Imaging to r/o torsion

58 3 Take Home messages

. Pt's less than one year of age tend to have testicular torsion, and patients greater than 18 years of age tend to have epididymitis.

- Testicular torsion tends to be acute in onset

and accompanied by nausea and vomiting.

. Patients with epididymitis tend to be gradual in onset and accompanied by fever.

- Patients with clinically suspected testicular torsion need to go directly to the OR.

59

Take Home Messages

- There is no reliable predictor of duration or extent of ischemia in testicular torsion.

. Torsion of the testicular appendage is common, and once diagnosed can be managed conservatively

. When the diagnosis is unclear, color doppler ultrasound is the diagnostic test of choice.

- "Time is Testicle"

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Doppler Ultrasound and stethoscope

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