Limping Kids
SJRHEM Rounds - Dr David Lewis

October 11th 2014
Limping Kids

* A Case Base Rounds
* Interactive
* Links to further reading
* Posted to the website
* www.sjrhem.ca
**Case 1**

- **Age of Child**

- An *18 month* old toddler presents with inability to weight bear through the left leg

- What is the **most** likely diagnosis?

- Click **one** letter

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>A.</strong></td>
<td>Septic arthritis hip</td>
</tr>
<tr>
<td><strong>B.</strong></td>
<td>Legg Calve Perthes</td>
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<tr>
<td><strong>C.</strong></td>
<td>Slipper capital femoral epiphysis</td>
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<td><strong>D.</strong></td>
<td>Transient Synovitis</td>
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<td><strong>E.</strong></td>
<td>Toddlers fracture</td>
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- B. Legg Calve Perthes
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- D. Transient Synovitis
- E. Toddlers fracture
# Case 1
- Age of Child

<table>
<thead>
<tr>
<th>Age</th>
<th>Common Types of Causes of Limping</th>
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<tbody>
<tr>
<td>0-4 yrs</td>
<td>Developmental</td>
<td>Hip dysplasia</td>
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<tr>
<td></td>
<td></td>
<td>Corto varix</td>
</tr>
<tr>
<td>Trauma</td>
<td>Toddler’s fracture</td>
<td>Physical fracture</td>
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<tr>
<td></td>
<td></td>
<td>Puncture wound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sprain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contusion</td>
</tr>
<tr>
<td>Infectious or inflammatory</td>
<td>Osteomyelitis</td>
<td>Septic arthritis</td>
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<tr>
<td></td>
<td></td>
<td>Synovitis - Viral, bacterial, atypical (Lyme disease)</td>
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<td></td>
<td></td>
<td>Diastasis</td>
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<tr>
<td>Miscellaneous</td>
<td>Neoplasia</td>
<td>Muscular dystrophy</td>
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<tr>
<td></td>
<td></td>
<td>Cerebral palsy</td>
</tr>
</tbody>
</table>

## Day 1
**Toddler’s Fracture**

Case 1
- Age of Child

4-10 yrs
- Trauma
  - Physical fracture
  - Puncture wound
  - Sprain
  - Contusion

- Infectious
  - Synovitis - Viral, bacterial, atypical (Lyme disease)
  - Sepsis arthritus
  - Osteomyelitis

- Osteochondromas
- Neoplasia
- Inflammatory
  - Legg-Calve-Perthes disease
  - Leukemia
  - Juvenile rheumatoid arthritis

http://emedicine.medscape.com/article/1258835-overview#a1
Case 1
- Age of Child

10-18 yrs  | Trauma
---|---
| Slipped capital femoral epiphysis
| Fracture
| Sprain
| Contusion

Neoplasia
Infectious
Osteochondroses
Microtrauma
Tarsal coalition

Various
Septic arthritis
Lyme arthritis
 Gonococcal arthritis

Various
Stress fracture

http://emedicine.medscape.com/article/1258835-overview#a1

Left early SCFE
An 18 month old toddler presents with inability to weight bear through the left leg.

Which component of assessment will most easily localise to either hip or knee and below?

Click one letter:

- A. History
- B. Examination - Look
- C. Examination - Feel
- D. Examination - Move
- E. X-ray entire leg
Case 2
- Localise Pathology

Where is the pathology?
Case 2
- Localise Pathology

Limps but Can Crawl = Pathology Below Knee
Case 3

An 15 year old boy presents with a limp. He had suffered sudden onset pain in the upper leg while scoring the winning goal in a soccer game.
Case 3

* An 15 year old boy presents with a limp. He had suffered sudden onset pain in the upper leg while scoring the winning goal in a soccer game.

* O/E: He is tender in the upper thigh with weakness of hip flexion
An 15 year old boy presents with a limp. He had suffered sudden onset pain in the upper leg while scoring the winning goal in a soccer game.

What is the least likely diagnosis?

Click one letter

A. Quads muscle tear
B. Femoral fracture
C. Slipper capital femoral epiphysis
D. Gilmore groin
E. Avulsion fracture
Case 3

- An 15 year old boy presents with a limp. He had suffered sudden onset pain in the upper leg while scoring the winning goal in a soccer game.

- What is the most likely diagnosis?

- Click one letter

  A. Quads muscle tear
  B. Femoral fracture
  C. Slipper capital femoral epiphysis
  D. Gilmore groin
  E. Avulsion fracture
Case 3

- An 15 year old boy presents with a limp. He had suffered sudden onset pain in the upper leg while scoring the winning goal in a soccer game.

- Investigation of choice?

- Click one letter

  A. X-ray Femur
  B. PoCUS - Thigh
  C. X-Ray Pelvis
PoCUS - Thigh
Quads Tear

Pelvic Sports Avulsion Injuries

1. Ilio-psoas
2. Hamstring
3. Rectus Femoris
4. Sartorius
5. Glutius

* Click the letter corresponding to 1
Pelvic Sports Avulsion Injuries

1. Ilio-psoas
2. Hamstring
3. Rectus Femoris
4. Sartorius
5. Glutius

* Click the letter corresponding to 2
Pelvic Sports Avulsion Injuries

1. Ilio-psoas
2. Hamstring
3. Rectus Femoris
4. Sartorius
5. Glutius

* Click the letter corresponding to 3
Pelvic Sports Avulsion Injuries

1. Ilio-psoas
2. Hamstring
3. Rectus Femoris
4. Sartorius
5. Glutius

* Click the letter corresponding to 4
Pelvic Sports Avulsion Injuries

1. Ilio-psoas
2. Hamstring
3. Rectus Femoris
4. Sartorius
5. Glutius

* Click the letter corresponding to 5
Pelvic Sports Avulsion Injuries
Rectus Femoris - AIIS

Case 3

AP

Oblique
Case 4

• An **18 month** old toddler presents with inability to weight bear through the left leg

• The onset has been gradual over the last 36hrs

• You are able to localise the cause of the limp to the hip
Case 4

- An **18 month** old toddler presents with inability to weight bear through the left leg.

- The onset has been gradual over the last 36hrs.

- You are able to localise the cause of the limp to the hip.

- There is a history of intermittent fever.

- Rotating the hip causes the child to cry.

- Analgesia is ordered.
Case 4

• An 18 month old toddler presents with inability to weight bear through the left leg

• The onset has been gradual over the last 36hrs

• Next steps?

• Click one letter

  A. X-ray
  B. PoCUS, CBC, CRP
  C. X-ray, CBC, CRP
  D. PoCUS, CBC, ESR
  E. X-ray, CBC ESR
Case 4
Case 4
Peds Hip PoCUS

* Requirements
  * High frequency linear probe
  * Co-operative child and parent!
  * 1st hand holds probe, 2nd hand holds leg
  * 3rd hand to freeze image!

* Top Tips
  * Gel on parent first
  * “do you want to see your leg on TV?”
  * Ask parent to apply gel
Peds Hip PoCUS

• Child supine

• Probe transverse on upper femur

• Move proximally until grtr trochanter

• Align probe along femoral neck by rotating 45° oblique

• Identify neck, growth plate and head

• Identify hyperechogenic capsule & iliopsoas tendon
Peds Hip PoCUS

- Normal = concave upwards
- Abnormal = convex upwards
- 2 mm = normal
- Asymmetry >2mm

- The cause of effusion cannot be differentiated by ultrasound
Peds Hip PoCUS
Peds Hip PoCUSH
Peds Hip PoCUS
Case 4

- Markers

- An 18 month old toddler presents with inability to weight bear through the left leg

- The onset has been gradual over the last 36hrs

<table>
<thead>
<tr>
<th>Markers</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. CBC, ESR or CRP</td>
<td>B. PoCUS, CBC, CRP</td>
</tr>
<tr>
<td>C. X-ray, CBC, CRP</td>
<td>D. PoCUS, CBC, ESR</td>
</tr>
<tr>
<td>E. X-ray, CBC ESR</td>
<td></td>
</tr>
</tbody>
</table>
Case 4

- Markers

- JBJS 2011

- 311 children

- 282 TS 29 SA

- CRP > 20mg/l was strongest predictor (OR 81.9 p<0.0001)

- Ability to WB + CRP < 20 had <1% probability of SA

http://www.bjj.boneandjoint.org.uk.ezproxy.library.dal.ca/content/93-B/11/1556.full.pdf#page=1&view=FitH
Case 4

- Markers

References


http://refworks.scholarsportal.info/refshare2?
site=010391143777600000/259111413237521711/Limping%20Kid
Case 5
- ?Trauma

* An **18 month** old toddler presents with inability to weight bear through the left leg

* The onset was sudden after a minor fall while toddling...

* **Or** the onset was sudden with no definite witnessed trauma
Case 5
- ?Trauma

* An 18 month old toddler presents with inability to weight bear through the left leg

* The onset was sudden after a minor fall while toddling...

* Or the onset was sudden with no definite witnessed trauma

Non Accidental Injury

Toddler’s fracture is not typical for NAI
Case 5
- Trauma

An 18 month old toddler presents with inability to weight bear through the left leg.

The onset was sudden after a minor fall while toddling...

Which clinical feature are not typical for toddler’s fracture:

- Pretibial palpable warmth
- Cuboid tenderness
- Erythema
- Calcaneal tenderness
- Tibial torsion tenderness

Click one letter
Case 5

- Trauma

Gently twist in opposite direction
Palpate Cuboid
Palpate Calcaneum
Palpate Metatarsals
Case 5
- Trauma

Initial X-Ray

2/52 X-Ray
Case 5
- ?Trauma

- Treatment with an AK cast results in full recovery within 2 - 4 weeks of injury

- So how do you decide who to treat?
Case 5

- ?Trauma

**Sonographic diagnosis of toddler's fracture in the emergency department.**

Lewis D1, Logan P
Pearls

• A limping/NWB child that can crawl is likely to have pathology below the knee

• Examine least likely source of symptoms first.

• Flex, Adduct and Int Rot hip most likely manoeuvre to elicit pain in hip pathology

• Children >8yrs - X-ray hip first

• If fever (>38°C) or > 24hrs then bloods (incl CRP)

• CRP < 12 is very reassuring

• Positive ultrasound is most likely to be irritable hip

• Negative ultrasound - X-ray leg
What would you say if a parent says my kid is limping?
Thank you!