Pediatric Sports Injuries

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Upper Extremity Injuries

Clavicle Fractures
- Diagnosis by X-Ray
- Almost all are treated by sling and swathe
  - Pressure on fracture with figure 8 brace
- Watch for tenting of the skin

Acromioclavicular Sprain
- Also called a shoulder separation
- Dx by pain over AC joint and X-ray
- In skeletally immature it is usually a fracture through the growth plate
- Mainstay for treatment is symptomatic care

Glenohumeral joint dislocation
- Massive pain and inability to move shoulder
- May even complain of weakness in arm
- Diagnosis by PE and X-ray
  - 2 views (axillary)
- Treatment is by relocation
- If dislocation occurs in those younger than 18 then there is a >80% chance of recurrent dislocation
- May need to consider arthroscopic stabilization

Little League Shoulder
- Overuse injury to the proximal humeral physis
- Seen in throwers between 11-16
- Diagnosis made by X-ray
- Treatment is no throwing for 6 weeks, followed by x-ray evaluation showing normal physis with gradual reintroduction of pitching
- Pitching mechanics

Little League Elbow
- Medial traction, lateral compression
  - Medial epicondylitis, lateral OCD
- Diagnosis by pain in acceleration phase of throwing motion.
- Age is usually 8-12 years old
- Treatment is no throwing, ice and NSAIDS
- Throwing may resume once pain has resolved
  - No curve balls, sliders until older

Physiolysis of the Distal Radius
- Most commonly seen in gymnasts
- Described as insidious onset of pain at wrist
  - Tenderness over distal radius
  - swelling may be noted
- Radiographs show widened physis
- Treatment is rest with restriction of weight bearing activities for 6-8 weeks with or without immobilization.

Lower Extremity Injuries

"Hip pointers"
- Contusion to iliac crest
- Treatment: RICE
- Return to play when they have painless jog and jump

Apophyseal avulsion injuries
- Know anatomy
  - External Oblique

- Sartorius
- Rectus
- Psoas
- Hamstrings

Muscle Contusions/Strains
- Strains
  - Muscle (usually quad, hamstring, or gastroc) usually crosses 2 joints
  - Pt can report pain or ripping followed by cramp
  - Ice and rest are key components
- Contusions
  - Persistent symptoms may represent myositis ossificans (Ossification of injured muscle)
  - If present then avoid ultrasound and stretching

Iliotibial Band Syndrome
- Seen in runners
- The IT band rubs over the greater trochanter (hip) or the lateral condyle (knee)
- Treatment is rest, and IT band stretching

Knee Injuries
- Anterior Cruciate Ligament Injuries
  - Describe a "pop" and immediate effusion with a tear
  - Inability to maintain play
  - Inability to walk
  - If sprained then may be able to continue
  - Physical exam demonstrates increased translation anteriorly of the tibia on the femur.
  - Diagnosis by physical exam
    - MRI for associated injuries
  - Treatment for ACL tear is reconstruction after rehab
  - Sprains – rehab
- Tibial Spine Fracture
  - Skeletally immature
  - Bone weaker than ligament
  - Type I, II closed treatment
    - Knee in extension
  - Type III arthropscopic reduction
- Medial Collateral Injuries
  - Pain with valgus stress and tenderness over the ligament
  - Grade III tears show some gross instability
  - Treatment is with a hinged knee brace
  - Surgery is only rarely needed.
  - Watch for the MCL and ACL injury in combination
- Meniscal Tears
  - Typically meniscal injuries are from a twisting injuries
    - Maybe associated with ACL tears.
    - Usually a history of locking and catching are given.
    - MRI is the test of choice for evaluation of menisci
    - Treatment is excision of the torn portion of the menisci via arthroscopy or repair if the ACL is being repaired at the same time.
- Osgood-Schlatter's Disease
  - Seen in skeletally immature, preteen athletes
  - It is an apophysitis of the proximal tibial tubercle.
  - Pain with activity and at rest with direct pressure over tubercle
  - Treatment is "relative" rest, knee pads, hamstring and quad stretches, and NSAIDS
  - Resolves with closure of physis
- Patellar Tendonitis
  - Also called "Jumpers knee"
  - Pain at the inferior pole of the patella especially with jumping activity
  - Treatment is rest, stretching of the quad, NSAIDs, and a knee sleeve
- Sleeve Fracture
  - Fracture at inferior pole of patella

Can have large articular portion
Treatment is operative with any displacement
Tibial Stress Fracture
Startup pain and/or pain at end of activity
More common in runners
amenorrheal females
Black line on radiographs
impeding complete fracture
Children
Cancellous portion
Can mimic cancer, infection
Treatment with rest, and possibly fixation
Ankle injuries
Very common injuries
Important to distinguish between ankle sprains and fractures (especially Salter/Harris injuries of the distal fibula)
Point tenderness over a bony prominence
X-rays are warranted
probably dealing with a fracture.
pain medially require X-rays to rule out unstable sprains
Deltoid ligament
Ankle Sprains
Most common ligament injury is the Anterior Talofibular ligament (ATFL)
Palpation with pain along this ligament is diagnostic
Second most common is the calcaneneofibular ligament
Treatment is RICE (Rest, ice, compression, elevation
This is followed by weight bearing as tolerated with a compresssive wrap
Return to jogging when no swelling
Return to practice when no pain with cutting. May consider taping for practices

Low Back Pain in Athletes

Low back pain is very common
Pain for 3 weeks should be seen by MD
Physical examination
FABER test
Paraspinal spasm
Straight leg raise
Imaging
Lumbosacral series
Looking for Pars defect
SPECT scanning
Normal xrays
MRI for disc, edema, tumor, infection
Spondylolysis/Spondylolisthesis
Pars Interarticularis stress fracture
Most common cause of (real) back pain in adolescents
Seen in 4-5% of population
Can be an acute fracture (weakened pars) or stress reaction (hot on SPECT) or chronic (cold on SPECT)
Some give braces for those with acute fractures or stress reaction
No difference in outcomes from true healing and fibrous union
Watch for spondylolisthesis
Anterior translation L5/S1
Progression in immature
Surgery needed for
Large slip (over 50%)
Intractable pain that fails conservative measures
OR goal is to achieve fusion
Lumbar Disc Herniation

- Rare in children
- Radicular pain is common down leg
- Positive straight leg test
- In adolescents, can be a ring apophysis avulsion instead of disc
  - May require surgery
- Conservative treatment is the norm
- OR for recalcitrant symptoms

SI joint pain
- Pain with hyperextension
- Positive FABER test
- PT and NSAIDS cure most cases
- Consider spondyloarthopathy

Catastrophic Sports Injuries

Head and Brain injuries
- Intracranial hemorrhage
  - If there is a pressure phenomenon then decompression must occur for good outcome
- Concussions
  - Watch for second impact syndrome
    - Second injury before symptoms from first concussion abate (deadly)

Cervical Spine injuries
- Most seen in American Football
- Is associated with bony column disruption
- Key is the immobilization on the field without removing the helmet (have screwdriver ready).

Stingers
- Very common
- Usually C5-C6 dermatomes
- Only lasts 30-60 minutes
- Players with cervical stenosis have a higher incidence

Sudden Death
- Hypertrophic cardiomyopathy, subaortic stenosis
- Dysrhythmias
- Cardiac contusion or commotio cordis

Miscellaneous Sport Issues

Heat Exhaustion/Heat Stroke
- Incidence is on the rise, especially with the use of creatine
- The cause is decreased sweating and evaporation in the face of rising temperatures
- Dehydration adds to the cycle
- Presents with hyperpyrexia, and mental status change
- Treatment is immediate cooling, IV hydration, hospitalization
- Key is prevention through early hydration, limit outdoor activities during hottest part of the day, monitoring by parents and coaches

Overtraining syndrome
- Training beyond the ability of body to recover
- Common in endurance sports
- VO2 max will be lower than their average
- Treatment is rest (4-12 weeks) with plenty of sleep
- Children should have at lease 1-2 days off/wk and 1 week off every 2 months

Steroids
- Very common
  - 3-6% of high school students have tried them
- Seventh-grade girls were the fastest growing group of steroid users
  - 7 percent using them 2003 CDC data
- Pressure from home/school fuels the need
- Signs of increased acne, increased muscle, temperament changes, testicular atrophy

Downside: hepatic cancer, depression, suicide

Creatine

Used as a nutritional supplement for increased performance

High intensity, short duration

Weight gain (water retention), muscle cramping, muscle strains, dehydration and diarrhea

Contraindicated in patients with kidney disease

Long-term data is unknown

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