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COMMON MUSCULOSKELETAL PROBLEMS

C. CRAIG
M2 - MUSCULOSKELETAL

Fall 2008
ANGULAR and TORSIONAL DEFORMITIES of the LOWER EXTREMITIES
**TERMS**

Valgus  -  deviation away from midline
Varus  -  deviation toward midline
Torsion  (rotation)
  Internal
  External
Version  (rotation)
  Anteversion/retroversion
EXAMINATION

Relaxed
Supine/sitting/walking
Each individual joint
Beware any asymmetry
IN - TOEING

Metatarsus adductus
Newborn – 18 months
Limited to forefoot
80 % improve spontaneously
Casting
Surgery - rare
IN - TOEING

Internal tibial torsion  
6 – 18 months  
85 % improve spontaneously  
Defined by transmalleolar axis  
  Infant +5 /adult + 22 degrees
Image of tibial torsion removed
FEMORAL ANTEVERSION

3 – 9 years
Not “hip problem”
Improves spontaneously until age 12
DIFFERENTIAL DIAGNOSIS

Equinovarus (clubfoot)
Neurologic problems
  Cerebral palsy
  Myelodyplasia
OUT-TOEING

Calcaneovalgus foot
  Usually improves spontaneously
External tibial torsion
  Uncommon – neurologic problems
Myelodysplasia
Cerebral palsy
OUT - TOEING

External rotation contractures hips

Seen in newborn

Improve spontaneously first year
Drawing of newborn
out-toeing removed

Please see: http://www.cssd.us/body.cfm?id=1218
BOWLEGGS / KNOCK KNEES
EVALUATION

Clinical

Knee joint laxity
Range of motion
Location of angulation – femur/joint/tibia
Assess alignment – AP/lateral/rotation
EVALUATION

Radiographic

Long films – standing

Neutral alignment
EVALUATION

Laboratory

Renal function studies – BUN/creatinine
Calcium/Phosphorus/Alk.phos.
BOWLEGS (GENU VARUM)
Differential diagnosis

Physiologic (most common)
Blount’s Disease
Rickets
Skeletal dysplasia
PHYSIOLOGIC BOWLEGS

Normal in infants (15 degrees)
Neutral by 18-24 months
X-rays normal except for bowing
INFANTILE BLOUNT’S DISEASE

Growth retardation proximal tibial epiphysis
  Medial / posterior
Abnormal weightbearing stresses
  Early walkers
Obesity
Racial
Bilateral 75 %
IMAGING

Medial “beaking” initial sign
Progressive depression medial tibial plateau
Langenskiold stages I-V
GENU VALGUM

Developmental most common

Differential diagnosis

- Metabolic bone disease
- Renal osteodystrophy
- Trauma – proximal tibial fx.
- Tumor – fibrous dysplasia
DEVELOPMENTAL HIP DYSPLASIA

Etiology

Multifactorial

Not always congenital or dislocated

“continuum of dysplasia”
DDH - ETIOLOGY

Mechanical factors
First born (small space)
Breech presentation (60%)
Left hip (60%)
Torticollis (20%)
Metatarsus adductus/calcaneovalgus
DDH – ETIOLOGY

Physiologic factors

Female (6:1)

Hormones – estrogen

Environment

Cradle boards
HIP AT RISK

Major

Abnormal clinical exam
Breech presentation
First born female
Family history DDH
HIP AT RISK

Minor

Limitation of abduction
Sacral dimple
Foot deformity
Torticollis
Scoliosis
NEWBORN TO TWO MONTHS

Ortolani and Barlow tests most reliable

X-rays unreliable (false neg. 50%)

Ultrasound – non-invasive

Age limited

Operator dependent

May be too sensitive (immaturity)

Helpful for brace follow up
DDH - EXAM

Infant relaxed/supine
Stabilize pelvis
Flex hip 90 degrees
Adduct past midline / gentle outward pressure
Gentle abduction – lift toward socket
Feel dislocation/relocation
Not just abduction test
Sketch of DDH exam removed

Refer to: http://static.howstuffworks.com/gif/hip-dysplasia-screening.jpg
NEWBORN TO SIX MONTHS

Ortolani positive – reducible
 Reduce femoral head
 Maintain abducted and flexed
    100 degrees flexion/60 degrees abduction
 Document reduction (x-ray/ultrasound)
PAVLIK HARNESS

Maintains flexed/abducted posture
Free motion within limited range
Safe zone of Ramsey
Flexion above 90 degrees
Avoid excessive abduction
Avascular necrosis
TWO MONTHS TO TWO YEARS

Radiographic findings

Shenton’s line broken

Proximal/lateral migration femoral head

False acetabulum (acetabular dysplasia)
DDH EXAM

EVERY WELL BABY EXAMINATION
IDIOPATHIC SCOLIOSIS

Incidence - 22/1000
  4/22 require treatment

Sorting
  Discovery – school screening
  Initial exam – family MD/pediatrician
  Disposition - orthopaedist
SCOLIOSIS
ETIOLOGY - GENETIC

80% Positive family history
Variable expression
High degree penetrance
Equal sex distribution
SCOLIOSIS

CLINICAL EVALUATION

A-P alignment

Curve types
  Right thoracic/left lumbar most common
  Double major/thoracolumbar

Trunk alignment

Rib hump (forward bending test)
Sketch of scoliosis exam removed
Sketch of scoliosis vertebrae removed
SCOLIOSIS
CLINICAL EVALUATION

Sagittal alignment
Thoracic lordosis
Kyphosis
Lumbar lordosis
SCOLIOSIS
RADIOLOGIC EVALUATION

Standing PA and lateral films (initial)
  Entire spine
Cobb measurement method
Minimize follow up films
Risser grading – skeletal maturity
SCOLIOSIS

BEWARE

Painful scoliosis/neurologic findings

Progressive curve in males

Unusual pattern (left thoracic)

Rapid progression (> 1 degree/month)

INTRADURAL ABNORMALITY

Tumor/syrinx/ruptured disc
SUMMARY

Most angular deformities resolve with growth
Exam best screen for DDH in newborn
  Caution “hip at risk”
Majority of scoliosis non-progressive
Beware “unusual scoliosis”
Additional Source Information
for more information see: http://open.umich.edu/wiki/CitationPolicy

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