Common ‘COLD’ Paeds Ortho Conditions

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Head
Paediatric Orthopaedics, NUHS
Conditions encountered in General Practice

- Torticollis
- Scoliosis
- Intoeing/outoeing
- Knee deformities
- Foot deformities
Torticollis

- Commonly known as wry neck

- Types
  - Congenital: commonest type, usually due to fibrosis and shortening of the SCM
  - Acquired: trauma (fractures, C1/C2 dislocation),
  - Acute secondary to any infection involving surrounding tissue or structures of the neck
Congenital Muscular Torticollis

• ("Sternomastoid Tumour")
  – Swelling in the muscle with later fibrosis
Torticollis

• Muscular
• Treat underlying cause for acquired type
• Congenital type:
  – stretch the SCM.
Surgery – release of tight SCM
Scoliosis

- Abnormal curvature of the spine
- Girls twice as often as boys
Scoliosis - Classification

• Idiopathic
  – Adolescent (onset ≥10 years)
  – Juvenile (4-9 years)
  – Infantile (<4 years)

• Neuromuscular (e.g., CP; myelomeningocele, SMA, DMD)

• Congenital (hemivertebrae).

• Syndromic (e.g., Marfan; Ehlers-Danlos; Neurofibromatosis, VACTERL)
Why is the Adam’s Bend test positive?
Spine- Forward Bending Test
RED FLAGS that the scoliosis not idiopathic?
Pain, weakness, B & B
• Treatment
• Conservative:
  – Observation: young patients with mild curves of less than 20 degrees
  – Orthosis: progression of the curve (an increase of 5 degrees during 6 months)
Indications for a brace

Bracing…

- curves greater than 23 degrees
- Risser 0,1 or 2
- curves (apex lower than T7)
- Compliance (66%)
The Boston (underarm) Brace
• Surgery
  Indications
    - Increasing curve in growing child
    - Severe deformity (>50 degrees) with asymmetry of trunk in adolescent
Congenital Scoliosis

- failure of formation
  - Hemivertebra
  - Wegde vertebra

- failure of segmentation
  - Block vertebra
  - Unsegmented bar
NM Scoliosis
Polydactyly
Polydactyly Post-axial with renal abnormality
Intra-op Polydactyly
Knee deformities

- Genu Varum/ Valgum
  - Physiological
  - Pathological
    - Blounts
    - Rickets
Aidil A: Blount’s
Blount’s Disease

- Metaphyseal-diaphyseal angle
  - Abnormal if > 11 degrees
**Blounts disease**

- **Growth disorder** of the **medial aspect** of the proximal tibial physis leading to varus angulation of the proximal tibia and medial rotation of the tibia

- **Risk factors**
  - obesity
  - female gender
  - afro-american lineage
  - walking at an early age
  - family history (?), 9-43% have an affected family member
Adolescent Blount's
Bilateral HTO
Rickets

• Failure of mineralisation of physes or bone due to Vit D deficiency

• Causes
  – Nutritional deficiency
  – GI absorption defects
  – Renal tubular defects: Renal tubular acidosis Renal osteodystrophy
  – Miscellaneous: Anticonvulsants, Heavy metal intoxication, Hypophosphatasia
8 year old male
• **Clinical features**
  - Infants: failure to thrive, muscle flaccidity, may have tetany/convulsions
  - Flattening of occiput (craniotabes), Rickety rosary (enlarged costochondral junctions), Lateral indentation of chest (Harrison’s sulcus)
  - Bow legs, knock knees,
  - Thickening of knees, ankles and wrists from physeal overgrowth resulting in swollen joints
• Investigations
  – Xrays
  – Bloods: Reduced calcium, ↓ PO4, ↑ ALP

• Treatment
  – Correct cause
  – Correct deformity
Genu Valgum
Rickets, MED:
8 Plate Models
EdwinaC: 8 Plate Hemangioma
CC L:
Dysplasia
Epiphyseodesis
Near maturity

- Clinical presentation
CASE 3

- Intraoperative Xray
CASE 3

- Clinical outcome

![Image of standing person in scrubs with blue curtain in background]
Foot deformities

- Clubfoot
- Flat foot
- High arched foot
Congenital Club Foot (CTEV)
Clubfoot

• Coomoest foot disorder
• 1 per 1000 live births (Caucasians)
• 2:1 male: female
• Risk factors: maternal smoking, oligohydramnios, family history

• Types
  – Postural
  – Structural
    • Idiopathic: usually unilateral
    • Secondary – Arthrogryposis, Neuromuscular conditions. Usually bilateral
• Components
  – Hindfoot equinus
  – Midfoot cavus
  – Forefoot adduction

• Treatment
  – Aim to Correct deformity early, fully and hold the correction until growth stops
    • Conservative- serial manipulation and casting, orthosis
    • Surgery- soft tissue release, tendon transfers, osteotomies
TA Tenotomy
Residual Clubfoot
Spott Post-op Results
Planus & Cavus

• Pes planus
  – Flexible: physiological, Hyperlaxity of ligaments
    • Usually conservative treatment suffices, arch support
  – rigid: tarsal coalition, vertical talus, neuromuscular, idiopathic
    • Usually requires surgery

• Pes cavus (High Arch Foot)
  – Neuromuscular: HSMN, cerebral palsy, spina bifida etc
  – Other causes- compartment syndrome, Burns etc
  – Usually requires operative treatment
Assessment - Examination

• Heel
• Tip toe
• Too many toes sign
• Jack’s test
• Ligamentous laxity
• Flexible
Assessment - Examination

- Heel
- Tip toe
- Too many toes sign
- Jack’s test
- Ligamentous laxity elsewhere
- Flexible
Assessment - Examination

- Heel
- Tip toe
- Too many toes sign
- Jack’s test
- Ligamentous laxity
Brace and pedograph
M adolescent
Calcaneal Lengthening
Flatfoot with subtalar fusion
Johannezen Bin Omar: Subtalar foot
Cavus Foot

- Cavus foot, or pes cavus

- a foot deformity characterized by an unusually high arch
Foot – Cavus
Rotational deformities of lower limb

• Intoeing gait vs Out toeing gait

• Intoeing gait (more common)
  – Metatarsus adductus
  – Tibial intorsion
  – Femoral anteversion
  Treatment: observation, splints, surgery

• Out toeing gait
  – Usually most common cause is external tibial torsion
    • Idiopathic
    • Or overcompensating for excessive femoral anteversion
Intoeing
(‘pigeon-toed’)

- Cause can from hip to feet
Leg- Internal Torsion of Tibia
Leg- Bowing of Tibia
Internal Femoral Torsion
Jonathan H
Jonathan H
Severs disease
Measuring LLD
Before: Limb length discrepancy
1st Cut

Initial gap widens
Bone lengthens

External fixator removed
Rena Er:
LLD
Daniel:
Femur LON
Siti Hajjar:
HME Forearm
THANK YOU