

Musculoskeletal System Outline – Child

I. Osteogenesis Imperfecta

- A. Definition- Rare inherited genetic disorder in which bones fracture easily
- B. Pathophysiology
 - 1. Abnormal precollagen which prevents formation of collagen
 - 2. Faulty bone mineralization, abnormal bone architecture, fractures
 - 3. Several Main types
 - a. Type 1 _____
 - b. Type 2 _____
- C. Clinical Manifestations
 - 1. Bone fragility and fractures
 - 2. Hearing loss, blue tinted sclera, dental issues
- D. Diagnosis
 - 1. History & Physical
 - 2. X-ray
 - 3. Gene testing
- E. Therapeutic Management
 - 1. Braces and splints
 - 2. Physical therapy & simple exercises
 - 3. Surgery prn for fractures that need stabilization
 - 4. bisphosphonate with IV pamidronate
- F. Nursing Considerations
 - 1. _____
 - 2. _____
 - 3. _____
 - 4. _____
 - 5. _____

II. Legg-Calve – Perthes Disease (Coxa Plana)

- A. Definition- Avascular necrosis of the femoral head
- B. Incidence- higher in boys, higher in whites.
- C. Pathophysiology- cause unknown, but there is a temporary disturbance of circulation to the femoral capital epiphysis thus causing ischemic necrosis of the femoral head
- D. Stages (4)
 - 1. Avascular stage- causes degenerative changes, flattening of femoral head
 - 2. Fragmentation or Revascularization stage- gives a mottled appearance on xray
 - 3. Reparative stage- reossification, new bone formation
 - 4. Regenerative stage- healing and reformation of the femoral head
- E. Clinical Manifestations
 - 1. _____
 - 2. _____
- F. Diagnosis
 - 1. X-ray
- G. Therapeutic Management
 - 1. Goal: _____
 - 2. Initially: decrease inflammation, restore motion with rest, NSAIDS, ROM
 - 3. To contain the head of the femur: non weight bearing devices like abduction braces, or leg casts
 - 4. Without containment: Femur head remolds into mushroom shape, hip unstable

5. Surgery- reconstruction of femoral head, stabilization of femoral head
- H. Prognosis- outcome is related to early and efficient treatment and age of child
- I. Nursing Considerations
 1. Education on management, compliance with devices PRN
 2. Family and patient support- hard for an active child to slow down

III. Slipped Femoral Capital Epiphysis

- A. Definition- disorder of adolescents in which the growth plate in the hip is damaged and the femoral head slips and stretches blood vessels to the epiphysis.
- B. Incidence
 1. Occurs most frequently in pre-adolescence-? hormone influence
 2. Obese children, very tall, thin, with rapid growth more so affected
- C. Diagnosis
 1. X-ray
 2. Physical exam- externally rotated leg, flexion issues, shortening
- D. Clinical Manifestations
 1. Pain- hip, groin, thigh, or knee
 2. Limp, inability to bear weight
 3. Limited ABDuction
- E. Therapeutic Management / Nursing Considerations
 1. Treat as early as possible to prevent _____
 2. Non-weight bearing, crutch usage, sports restriction
 3. Surgical- pinning using screws
- F. Complication- some will develop condition in opposite hip

IV. Scoliosis

- A. Definition- lateral (sideways) curvature of spine, spinal rotation causing rib asymmetry.
- B. Pathophysiology
 1. Most no apparent cause (idiopathic) -vs- Genetic?
 2. S Shaped curve of spine that worsens as child grows
 3. Most commonly occurs _____
- C. Clinical Manifestations
 1. Parents may notice ill-fitting clothes with uneven lengths
 2. No pain until curve becomes severe
- D. Diagnostic Evaluation
 1. Observe for asymmetry of shoulder, scapular/flank shape, hip height
 2. Scoliometer may be used to measure truncal rotation
 3. X-ray
- E. Therapeutic Management
 1. Current
 - Observe for mild curves (10-25 degrees)
 - Orthopedic intervention for moderate curves (25-45 degrees)
 - Surgical intervention and fusion for severe curves (45-50 degrees)
 2. Bracing- used for slowing progression of curvatures
 - 2 main types
 - 1.) Boston brace or Wilmington Brace
 - 2.) Thoracolumbosacral orthosis (TLSO)
 - Brace education: Wear prescribed amount of time daily, support for body image, skin protection
- F. Surgical Repair

1. May be required for severe curves > 45 degrees
2. Spinal Fusion- to realign and straighten the spine using internal fixation
3. Post-op care- maintain proper body alignment, log rolling, back brace prn, wound assessment, vital signs, neurologic status of extremities, pain control, I&O, Bowel/Urinary status, gentle ROM with PT, ambulation with PT

Juvenile Rheumatoid Arthritis

- A. Definition- chronic inflammation of synovium and joint effusion, autoimmune process
 - Idiopathic chronic inflammation of synovium and joint effusion
 - Leads to erosion, destruction and fibrotic changes of articular cartilage
 - May develop adhesions between joint surfaces and ankylosis of joints if persists
- B. Etiology- unknown cause, usually starts before age 16, as early as 1-3, girls more affected
- C. Clinical manifestations
 - Affected joints warm, tender, stiff with decreased ROM. Worse in AM
 - Exacerbations/Flare ups can happen
 - Complications associated with disease: uveitis, G&D issues
- D. Diagnosis
 - H&P= joint pain/arthritis pain in child for > 6 weeks is a clue
 - ESR/CRP “may” be elevated- Not definitive
 - Eye exam for uveitis
- E. Therapeutic Management
 - No cure
 - Goals- control pain, preserve joint motion/function, promote normal G&D
- F. Medications
 1. _____
 2. _____
 3. _____
 4. _____
- G. Long Term Care
 - Unrealistic pain free life, but less pain is achievable
 - Stay active, but rest often
 - Water therapy beneficial, physical therapy, occupational therapy
 - Need to be encouraged to attend school, school nurse can aid in rest periods
 - Promote independence, normal activities, support
 - Heat relieves pain/stiffness. Safety with heating blankets, hot packs etc.
 - Morning routine: wake, take meds, rest ~1 hr, hot shower/bath, gentle ROM