Bullet Point Nursing

Medical - Surgical / Adult Health Nursing – Musculoskeletal system

Disclaimer: These notes are designed to provide the key points of each topic. These notes should be used with the associated lectures that expand upon each of the points. Every effort is made to ensure this content is up to date and accurate at the time of writing. No liability is assumed for the content or its relation to current standards and practices.

Anatomy and physiology musculoskeletal review:

- Bones: Provide structure, protect organs, store minerals (calcium, phosphorus), and produce blood cells (hematopoiesis).
- Joints: Allow movement and are classified as synovial (freely movable, most common), cartilaginous (slightly movable), and fibrous (immovable).
- Muscles: Skeletal (voluntary), smooth (involuntary), and cardiac (heart).
- Tendons & Ligaments: Tendons connect muscle to bone; ligaments connect bone to bone.
- Bone mass decreases with age, increasing risk of injury.
- Calcium is the most important element for the contraction of muscle and strength of bones
- Bone remodeling is controlled by osteoblasts and osteoclasts. These are regulated by the parathyroid hormone, calcitonin, and vitamin D.

Musculoskeletal assessment and diagnostics:

- Inspection: Look for deformities, swelling, asymmetry, discoloration. Inspect gait and balance.
    - Trauma / EMS assessment: DCAP-BTLS
- Palpation: Check for bruising, tenderness, and crepitus.
- Neurovascular: Assess circulation, motor and sensation in all four extremities.
- Range of Motion (ROM): Active vs. passive movement limitations.
- Strength Testing: Graded on a scale of 0 (no contraction) to 5 (full strength).
- Arthrocentesis: A procedure in which a needle is inserted into a joint space to aspirate synovial fluid for diagnostic or therapeutic goals (infection, gout, or effusion).
- Imaging & Labs: X-rays (fractures, arthritis), MRI (soft tissue), BMD (metabolic bone diseases), DEXA (osteoporosis), ESR/CRP (inflammation), uric acid (gout).

Nursing notes:

- Fall Prevention:
    - Crutches: Support your weight on hands, not axilla. Place the crutches 6-10 inches in front of the foot. Elbows should be flexed.
        - Gaits: 2-point, 3-point, 4-point, swing to, and swing through.
    - Canes: Elbows should be flexed. Hold the cane on the unaffected side.
    - Home safety:
        - Remove loose rugs or secure them with non-slip backing. Ensure good lighting, especially in hallways and staircases. Keep floors free of clutter, cords, and other tripping hazards. Install grab bars in the bathroom (near the toilet and inside the shower/tub). Use non-slip mats in the shower. Ensure stairways have sturdy handrails on both sides.

- Orthostatic hypotension: Assess risk of prescribed medication and provide education.

Pathophysiology and Nursing Practice:

- **Fracture**
  - Patho: A break in the bone caused by trauma or bone decalcification.
    - Classified as closed (simple), open (compound), transverse, oblique, spiral, comminuted, greenstick, pathologic, and stress (hairline).
  - Presentation: Pain, tenderness, instability, crepitus, deformity, edema and bruising.
  - Diagnosed based on x-ray.
  - Management: Immobilize, ensure CMS distal to fracture,
  - Nursing notes:
    - Strains are excessive stretching of a tendon.
    - Sprains are excessive stretching or tearing of a ligament.
      - Treat with RICE
    - Traction is pulling force on a fractured limb to reduce and immobilize.
    - Reduction is manipulating to achieve bone alignment (open or closed)
    - Casts immobilize fractures and can be plaster, air, or fiberglass.
      - Wet plaster casts dry in 24-72 hours.
      - Perform skin assessment
    - Fat embolism: Fat particles enter the bloodstream, leading to respiratory distress. Nursing interventions include oxygen therapy, early immobilization of fractures, administer prescribed fluids and anticoagulants.
    - DVT/PE: Patients with fractures are at high risk for deep vein thrombosis (DVT) or pulmonary embolism (PE) due to immobility, venous stasis, and endothelial injury; prevention includes early ambulation, anticoagulation, compression devices.
    - Compartment syndrome: An emergency caused by increased pressure within a muscle compartment, leading to compromised circulation. This often follows fractures, crush injuries, or tight casts.
      - Signs include pain out of proportion, pallor, paresthesia, leading to pulselessness. Nursing management: remove restrictive dressings and notify the provider immediately for potential fasciotomy.
- **Osteoarthritis (OA)**
  - Patho: Degenerative disease of the articular cartilage
  - Presentation: Asymmetric joint pain, mostly in the larger joints, worse with activity.
    - Bouchard's nodes are bony overgrowths of the middle joints of the fingers caused by osteoarthritis
    - Heberden's nodes are bony enlargements of the joints closest to the tips of the fingers caused by osteoarthritis
  - Diagnosed based on presentation, x-ray, and biopsy to rule out RA.
  - Management: Weight loss, PT, OTC medications, surgery.
  - Nursing notes: Monitor for fall risk
- **Rheumatoid arthritis (RA)**

  - Patho: Progressive inflammatory autoimmune disorder of the synovial joints
  - Presentation: Symmetric tenderness and stiffness of smaller joints, generally worse in the morning. Can also have fatigue, low-grade fever, weight loss. High ESR, CRP.
  - Diagnosed based on presentation, RA factor blood test, x-ray, and biopsy.
  - Management: PT, ROM exercises, heat/cold, NSAIDS, DMARDS, steroids.
  - Nursing notes: Monitor for anemia
- **Osteoporosis**
  - Patho: Bone resorption exceeds bone formation. This leads to decreased bone density and increased fracture risk.
  - Presentation: Often asymptomatic, presents with fractures.
  - Diagnosed based on DEXA scan.
  - Management: Bisphosphonates, SERMs
  - Nursing notes:
    - Can be age related (primary) or from medications or disease (secondary)
    - Always educated on calcium and vitamin D
    - Teach fall prevention.
- **Gout**
  - Patho: Inflammatory arthritis caused by uric acid crystal deposition in joints
  - Presentation: Rapid onset of pain, swelling, erythema, and warmth in a single joint.
  - Diagnosed based on history, presentation, uric acid level, joint aspiration, imaging.
  - Management: NSAIDS, colchicine, steroids (oral or injection)
    - Can take preventative medications (allopurinol, probenecid, colchicine)
  - Nursing notes:
    - Most commonly affects the big toe joint.
    - Educate on avoiding triggers (alcohol, red meats, and more), and hydration.
    - Preventions meds cannot be started during an acute episode.

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References:

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