Chapter 25

Immobility and Associated Problems

Immobility: Terminology

- Hemiplegia
  - Paralysis on one side of the body
- Paraplegia
  - Paralysis of the lower body half
- Quadriplegia
  - Paralysis of trunk and all four limbs
- Diplegia
  - Symmetrical paralysis in any area of the body

Musculoskeletal Effects

- Inactive muscle
  - Loss of strength, endurance, and mass
  - Muscle atrophy
  - Prolonged bed rest may lead to loss of half of the muscle strength.
  - Correct positioning
  - Essential for inactive muscles and joints
- Loss of bone mass
  - Lack of weight-bearing activity and muscle action
    - Reduces osteoblastic activity
    - Osteoclastic activity continues.

Musculoskeletal Effects (Cont.)

- Tendon and ligaments
  - Require movement to maintain structure and function
  - Days of immobility will shorten these connective tissue structures, and density increases.
    - Results in limited flexibility and range of motion

Contracture of Feet: Patient with Muscular Dystrophy

From Jahss MH: Disorders of the Foot and Ankle, vol. 1, ed 2, Philadelphia, 1991, Saunders.

Cutaneous Effects

- Factors that promote skin breakdown
  - Poor general circulation or anemia
  - Edema
  - Inadequate subcutaneous tissue in older adults or disabled persons
  - Loss of sensation
  - Mechanical irritation or friction
  - Excessive moisture from perspiration or urine
  - Inadequate personal hygiene
  - Inadequate nutrition or hydration
  - Trauma to the skin

Cardiovascular Effects

- Full immobilization—initially
  - Blood pools in trunk
  - Venous return may increase.
- Prolonged immobility
  - Venous return and cardiac output reduced
  - Orthostatic hypotension—at change of position
    - Short periods of dizziness
    - Fainting
    - Pallor and sweating
    - Rapid pulse

Cardiovascular Effects (Cont.)

- Patient becomes mobile after long bed rest
  - May take weeks for cardiovascular reflex controls to return to normal
- Blood pooling—stasis
  - Increased capillary pressure and edema
  - Promotes thrombus formation in veins
    - Particularly in deep leg veins
  - Blood clotting in patients with dehydration or cancer
    - May be encouraged by increased venous pressure or damage to blood vessels

Cardiovascular Effects (Cont.)

- Blood pooling—stasis
  - Thrombi may break away with movement or massage
    - Pulmonary embolus
    - Venous stasis, hypercoagulability, and blood vessel damage, increase the chance of deep vein thrombosis.

Respiratory Effects

- Decreased metabolism
- Respiration slow and shallow
- Deep breathing and coughing more difficult
- Drugs
  - Sedatives and analgesics
    - Depress neuromuscular activity and respiratory control center
- Increased secretions in the lungs
  - Pneumonia
  - Atelectasis

Gastrointestinal Effects

- Decreased dietary intake
  - Appetite reduced
  - Negative nitrogen imbalance
    - Protein deficit
- Constipation
  - Caused by muscle inactivity and body position
  - Reduced food, fiber, fluid intake
- Obesity
  - When prolonged immobility occurs and caloric intake exceeds energy need

Urinary Effects

- Stasis of urine
  - In kidneys or bladder
    - Normal drainage by gravity impeded
  - Infection
    - Stasis of urine and calculi are predisposing factors.
  - Renal calculi (stones)
    - More likely in people with hypercalcemia
  - Bladder infection
    - Common if catheters are used
  - Increase in diuresis, resulting in dehydration
    - Variety of causes

Neural and Psychological Effects

- Neural effects
  - Continuous pressure on skin and underlying tissue will stimulate mechanoreceptors, pain receptors and others.
  - Spasms may occur because of nerve damage, and therefore muscle innervation may ensue.
- Psychological effects
  - Effects of pain and lack of control over the environment
    - May cause depression and health-related problems

Effects of Immobility on Children

- Immobilized for extended period of time
  - Normal growth and development often delayed
- Contractures and loss of muscle tone may affect:
  - Hips
  - Spine
  - Hands and feet
- Mobility returns.
  - Catch-up growth possible