CHAPTER 14

PRESSURE INJURIES

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I. TERMS

A. “Pressure injury” is now preferred over “pressure/decubitus ulcer” or “bed sore”
B. Decubitus was a term to describe lying position; however, any position that causes sustained pressure to an area (e.g., sitting/side position) can cause a pressure injury. They can also occur due to casting or splinting after surgical procedures.

II. STAGING SYSTEM

A. Stage I: non-blanchable erythema of intact skin
B. Stage II: partial thickness skin loss with exposed dermis
C. Stage III: full thickness skin loss
D. Stage IV: full thickness skin and tissue loss with exposed fascia, muscle, tendon, ligament, cartilage, or bone
E. Unstageable: full thickness skin and tissue loss in which the extent of tissue damage cannot be determined because it is obscured by slough or eschar
F. Deep tissue injury: persistent non-blanchable deep red, maroon, or purple discoloration

III. “ICEBERG PHENOMENON”

A. Since skin can withstand ischemia much better than fat or muscle, a small skin wound on surface can reflect a large amount of deeper tissue necrosis underneath.

IV. EPIDEMIOLOGY

A. Quadraplegics: 60%
B. Bed-bound hospital patients: 10-15%
C. ICU patients: 33%
D. Hip fracture patients: up to 66%

V. COST

A. 5-11.6 billion dollars in annual healthcare costs
B. Additional $7,000-43,000 dollars per hospital stay
C. $21,000-152,000 to treat/heal per pressure injury
D. Medicare is primary payer for ~75% of hospitalizations with pressure injury

VI. AFFECTED BODY AREAS

A. Most common (order varies in literature): ischium, sacrum/coccyx, trochanter, heel
B. Other sites: occipital region, malleoli, spine, shoulder/scapula
C. Spinal cord injury patients: sacrum (acute), ischium (chronic)

VII. RISK FACTORS

A. Extrinsic: nonphysiologic, environmental
   1. Pressure (perpendicular) leads to deep necrosis: can develop after 2 hours of unrelieved pressure
   2. Shear (parallel) leads to superficial necrosis
   3. Friction
   4. Moisture
B. Intrinsic: physiologic
   1. Altered activity/mobility
   2. Cognitive deficit or altered consciousness
   3. Decreased autonomic control (e.g., incontinence)
   4. Infection → sepsis/ischemia
   5. Increased age
   6. Sensory loss
   7. Chronic illness: vascular disease/anemia
   8. Malnutrition
   9. Medications/immunocompromised (e.g., steroids)
C. Braden scale: measures pressure injury risk for adults/children using 6 domains (sensory perception, moisture, activity, mobility, nutrition, and friction/shear)

VIII. NON-SURGICAL TREATMENT

A. Prevention is the best treatment
   1. Keep skin clean and dry
   2. Appropriate nursing care, including turning the patient every 2 hours (avoid dragging/shearing skin of the patient while repositioning)
   3. Optimizing nutrition
   4. Relieving pressure using air mattresses, cushions, heel protectors
   5. Air fluidized beds (Clinitron®) gold standard for pressure injury prevention
B. Systemic infection/sepsis unlikely with pressure injury (unless immunocompromised): look for other source, e.g., urinary tract infection or respiratory tract when patients with pressure injuries present with fevers
C. If localized infection is present (look for signs of local cellulitis) topical antimicrobial agents (Silvadene, Sulfamylon) can be used
D. Bone biopsy best method to assess osteomyelitis versus osteitis
E. Can direct antibiotic therapy to treat osteomyelitis, but virtually impossible to eradicate infection with antibiotics alone
   1. MRI may be helpful as imaging study, while bone scans are often nonspecific due to presence of periostitis associated with open wounds
   2. Long term antibiotics are not indicated
   3. Pressure injury closure may be accelerated using topical protein growth factors
   4. Stage III-IV patients require sharp debridement, highly absorptive dressings (alginites, hydrocolloid beads, foams, hydrogels)
   5. VAC therapy may be beneficial to assist closure

IX. SURGICAL TREATMENT

A. Due to high recurrence rates, surgery tends to be reserved for patients with reversible pathologies
B. Patient motivation is an important determinant of recurrence risk in the alert patient
C. Excisional debridement of pressure injury and bursa and any heterotopic calcification
D. Partial or complete ostectomy to reduce bony prominence – may lead to new pressure injuries elsewhere (be careful when off-loading)
E. Closure of the wound with healthy, durable tissue that can provide adequate padding over the bony prominence (myocutaneous vs. fasciocutaneous flap)
F. Aftercare including appropriate surfaces and wound management are paramount
G. Lifestyle and activity modification often required in order to reduce recurrence risk

REFERENCES