INTEGUMENTARY DYSFUNCTION: Theoretical Skills and Knowledge, Scientific Principles, Critical Thinking, Healthcare Promotion, Wellness and Illness, and Stress Adaptation

Lecture Objectives:

1. Describe the characteristics of the skin of younger children and response to insult/injury.
2. Describe the various skin lesions distinguishing between primary and secondary lesions.
3. Differentiate between various laboratory studies used in the diagnostic evaluation of skin disorders.
4. Compare the various types of wounds: acute, chronic, epidermal, and injury to deeper tissues.
5. Analyze the processes and factors affecting wound healing.
6. Utilize the nursing process in the therapeutic management of wounds.

Lecture Objectives: (cont.)

7. Outline the pathophysiology, manifestations, and nursing care for the patient with infections of the skin.
8. Formulate a plan of care for the child experiencing a skin disorder related to chemical or physical contact.
9. Outline the nursing care of a child with a skin disorder related to an insect or animal contact.
10. Compare and contrast the nursing care of skin disorders associated with specific age groups of the pediatric population.
11. Apply the nursing process to the care of a child with a burn injury.
Reading Assignment:


Origin of Skin Lesions

- Contact with injurious agents
- Hereditary factors
- External factor that produces a reaction in the skin
- Systemic disease in which lesions are a manifestation

Examples of Age-Related Skin Manifestations

- Infants: “birthmarks”
- Early childhood: atopic dermatitis
- School-age children: ringworm
- Adolescents: acne
### Skin of Younger Children
- Epidermis is still loosely bound to the dermis
- Blisters readily form in any inflammatory process
- Integument is thinner
- Skin is more susceptible to superficial bacterial infections
- Commonly affected by chronic atopic dermatitis (eczema)

### Dermatitis
- Pathophysiology
- Diagnostic evaluation
- History and symptoms: pruritus, sensation
- Objective findings: lesion

### Types of Lesions (Primary vs secondary)
- Macule
- Papule
- Vesicle/bulla
- Pustule
- Cyst
- Patch
- Plaque
- Wheal
- Striae
- Scale
- Papule
- Vesicle/bulla
- Pustule
- Cyst
- Patch
- Plaque
- Wheal
- Striae
- Scale
- Crust
- Keloid
- Fissure
- Ulcer
- Petechiae
- Purpura
- Ecchymosis
Process of Wound Healing

- **Phase 1: inflammation**
  - Edema, angiogenesis, phagocytosis
- **Phase 2: granulation/proliferation**
  - Lasts 5 to 30 days
- **Phase 3: contraction**
  - Fibroblasts bring wound edges closer together
- **Phase 4: maturation**
  - Scar forms and changes over time

Factors Influencing Healing

- Moist, crust-free environment enhances wound healing
- Nutrition
- Stress
- Medications
- Infection
- Diseases

General Therapeutic Management

- Dressings
- Topical therapy
  - Agents
  - Methods
  - Topical steroids
  - Systemic therapy
Signs of Wound Infection

- Increased erythema, especially beyond wound margins
- Edema
- Purulent exudate
- Pain
- Increased temperature

Wound Care Basics

- Wash wound with mild soap and water and rinse
- Cover open wound
  - Small wound: adhesive bandage
  - Large wound: occlusive dressing
  - Leave wide margin of intact skin around dressing
  - Remove dressing if leakage; remove carefully

Relief of Symptoms

- Pruritus: most common complaint with skin lesions
- Cooling baths or compresses
- Prevent scratching
  - Mittens/covering for younger children
  - Short nails
  - Antipruritic medications
Skin Infections

- Bacterial infections
- Abscess formation
- Severity varies with skin integrity, immune and cellular defenses
- Examples: impetigo contagiosa, pyoderma, cellulitis

Viral Skin Infections

- Most communicable diseases of childhood have characteristic rash
- Examples: verruca, herpes simplex types I & II, varicella zoster, molluscum contagiosum

Fungal Skin Infections

- Superficial infections that live on the skin
- Also called dermatophytoses, tinea
- Transmission from person to person or from infected animal to human
- Examples: tinea capitis, tinea corporis, tinea pedis, candidiasis
Systemic Mycotic (Fungal) Infections
- Invade viscera as well as skin
- Wide spectrum of disease
- May appear as granulomatous ulcers, plaques, nodules, and abscesses

Contact Dermatitis
- Inflammatory reaction of skin to chemical
- Initial reaction in the exposed region
- Characteristic sharp delineation between inflamed and normal skin
- Primary irritant
- Sensitizing agent
- Examples: diaper dermatitis, reaction to wool, reaction to specific chemical

Poison Ivy, Oak, and Sumac
- Produces localized lesions
- Caused by urushiol from plant's leaves and stems
- Sensitivity may develop after one or two exposures and may change over time
- Therapeutic management
Drug Reactions

- Adverse drug reactions are most often seen in skin (rashes most common reaction)
- May be immediate or delayed following administration of drug
- Treatment: discontinue drug, antihistamines, corticosteroid therapy if very severe

Foreign Bodies

- Splinters of wood
- Cactus spines
- May require medical treatment if difficult to see or remove

Scabies

- Caused by scabies mite as female burrows into epidermis to deposit eggs and feces
- Inflammation occurs 30 to 60 days later
- Topical treatment: scabicides such as permethrin 5% or lindane
- Oral treatment: ivermectin if body weight >15 kg
Pediculosis Capitis (Head Lice)
- Very common, especially in school-age kids
- Adult louse lives only 48 hr without human host; female louse has life span of 30 days
- Females lay eggs (nits) at base of hair shaft
- Nits hatch in 7 to 10 days
- Treatment: pediculicides and removal of nits
- Preventing spread and recurrence

Arthropod Bites and Stings
- May cause mild to moderate discomfort
- Manage with symptomatic measures and prevention of secondary infection
- Bees: stinger penetrates skin
  - Remove stinger as soon as possible
  - Sensitization to beestings may result in anaphylaxis

Infections Transmitted by Arthropods
- Rickettsiae: Rocky Mountain spotted fever transmitted by infected fleas, ticks, and mites
- Lyme disease: most common tick-borne disorder in United States
- Vaccine against Lyme disease
- Focus on prevention
Animal Bites

- Common pediatric problem especially in children younger than 4 years
- Wound care
- Prophylactic antibiotics for some types of bites
- Rabies concern

Human Bites

- Lacerations from teeth of other humans
- Risk of infection
- Wound care

Cat Scratch Disease

- Occurs following a cat scratch or bite
- Most common cause of lymphadenitis in children
- Benign, self limiting that resolves in 2-4 months
- Treatment: antibiotics can hasten resolution
Miscellaneous Skin Disorders

- Urticaria
- Psoriasis
- Alopecia
- Intertrigo
- Stevens-Johnson syndrome
- Neurofibromatosis

Diaper Dermatitis

- Pathophysiology and clinical manifestations
  - Usually from irritation of urine and feces
  - Detergents inadequately rinsed from clothing
  - Chemical irritation (especially from diaper wipes)
- Nursing considerations: alter wetness, pH, and fecal irritants
- Candidiasis of diaper area

Eczema

- Refers to descriptive category of dermatologic disease and not a specific etiology
Atopic Dermatitis

- A type of pruritic eczema that begins during infancy
- Hereditary tendency
- Often associated with history of food allergies, allergic rhinitis, and asthma

Types of Atopic Dermatitis

- Three forms
  - Infantile eczema: begins 2 to 6 months of age
  - Childhood eczema: may follow infantile form
  - Preadolescent and adolescent: 12 years to early adult

Therapeutic Management of Atopic Dermatitis

- Relieve pruritus
- Hydrate skin
- Reduce inflammation
- Prevent/control secondary infection
Atopic Dermatitis

- Prognosis
- Nursing interventions

Seborrheic Dermatitis

- Chronic, recurrent inflammatory reaction of the skin; cause unknown
- Commonly occurs on scalp (cradle cap)
- Also seen on eyelids, nasolabial folds, ears
- Treatment: remove crusts, antiseborrheic shampoo

Acne

- Predominantly in adolescents
- Pathophysiology
  - Involves hair follicle and sebaceous glands
  - Comedogenesis
- Therapeutic management
  - General measures/overall health
  - Medications
Burns

- Toddlers: hot-water scalds
- Older children: flame-related burns
- Child abuse
- Child with matches or lighters accounts for 1 in 10 house fires

Characteristics of Burn Injury

- Extent of injury described as TBSA (total body surface area)—use age-related charts
- Depth of injury
  - 1st degree—superficial
  - 2nd degree—partial thickness
  - 3rd degree—full thickness
  - 4th degree—full thickness + underlying tissue
- Severity of injury

Severity of Injury

- Major burn injury—treat in specialized burn center
- Moderate burn injury—treat in hospital with expertise in burn treatment
- Minor burn injury—treat in outpatient setting
Inhalation Injury

- Trauma following inhalation of heated gases and toxic chemicals produced during combustion
- Heat damage below vocal cords is rare
- Upper airway obstruction may require endotracheal intubation

Pathophysiology of Thermal Injuries

- Systemic response involving capillary permeability
- Edema
- Hypovolemia
- Anemia

Complications of Burn Injuries

- Immediate threat of airway compromise
- Profound shock
- Infection (local and systemic sepsis)
- Inhalation injuries, aspiration, pulmonary edema, pulmonary embolus
Burns: Therapeutic Management

- Emergency care priorities
  - Stop burning process
  - Assess victim's condition
  - Cover burn to prevent contamination
  - Transport child to appropriate level of care
  - Provide reassurance

Burns: Therapeutic Management

- First priority: airway maintenance
- Fluid replacement therapy: critical in first 24 hours
- Nutrition: enhanced metabolic demands
- Medication: antibiotics, analgesics, anesthetics for procedural pain

Care of Major Burns

- Primary excision
- Debridement
- Topical antimicrobial agents
- Biologic skin coverings
  - Allograft (human cadaver skin)
  - Xenograft (porcine skin)
  - Synthetic skin substitutes
- Split-thickness skin grafts (sheet or mesh graft)
Care of Minor Burns

- Wound cleansing
- Debridement
  - Controversy: removal of blisters
- Dressings
  - Controversy: cover wound with antimicrobial ointment or use of occlusive dressings

Rehabilitation after Major Burns

- Begins once wound coverage has been achieved
- Prevention/management of contractures
- Physical/occupational therapy
- Multidisciplinary team
- Facilitate adaptation of child and family

Sunburn

- Ultraviolet A waves
- Ultraviolet B waves
- Importance of protection: sunscreens
Cold Injury

- Frostbite
  - Tissue damage due to ice crystals in tissues
  - Blisters appear 24 to 48 hours after rewarming
  - Treatment of blisters similar to burn treatment

- Chilblain
  - Redness/swelling especially of hands
  - Vasodilation, edema, bluish patches, itching and burning; symptoms continue after rewarming; usually resolve in a few days