Pediatric Intergumentary Disorders NCLEX Review

The skin serves multiple purposes and is important for maintenance of health and well-being and also impacts physical appearance and self-esteem. Skin serves as a protective covering; a barrier against mechanical, thermal, radiant,and chemical trauma. Key anatomic aspects related to skin include the following:

- Skin is resistant to penetration by microorganisms, dirt, and other substances.
- The skin plays a role in heat regulation by permitting heat loss or retention.
- The skin is a sensory organ with nerve endings that transmit touch, pain, and temperature. The skin has two layers—the epidermis (outer) and the dermis (inner).
- The dermis is primarily connective tissue and thus is affected by collagen diseases.
- Hair grows on the skin at different lengths; hair follicles are developed fully at birth, the presence of lanugo(fine body hair) indicates premature birth because it usually disappears by full-term birth.
- Subcutaneous tissues are under the dermis and provide a cushion for the underlying musculature.
- Sebaceous glands produce sebum (a fatty substance) that increases the water resistance of the skin.
- Sweat glands are present in areas of the body and function to assist in release of heat, fluid, and some electrolytes. Sweat glands located in the axilla, areola of the breast, and anal areas are not active during infancy and childhood, but they become mature at puberty.

II. SKIN LESIONS/DERMATITIS

More than half of dermatologic problems are types of dermatitis (inflammation of the dermis) from various causes. Irritation results in inter- and intracellular swelling and infiltration of the dermis and epidermis with vascular dilation and cellular infiltration around blood vessels. The type of lesion produced depends on where and how the response settles in and on the skin. Skin lesions vary in nature and can result from a multitude of injuries from abrasion to penetrating wound to infection, among other factors. Lesions can be primary resulting from an initial insult, or secondary resulting from healing or additional breakdown of the original involved area.

Primary lesions may be classified in the following ways:

- Bulla: Vesicle >1 cm in diameter (larger blister)
- Cyst: Palpable, elevated, encapsulated liquid or semisolid filled lesion with distinct borders (e.g., sebaceous cyst)
- Macule: Aflat, nonpalpable brown, red, purple, white, or tan area with a distinct regular border less than a centimeter in diameter
- Nodule: A1- to 2-cm elevated, firm, palpable mass deep in the dermis, with a distinct border
- Patch:Aflat nonpalpable irregular shaped macule that is >1 cm in diameter
- Papule:Afirm, elevated palpable brown, red, purple, white, or tan area with a distinct regular border less than a centimeter in diameter(such as warts)
- Plaque:Afirm, elevated flat rough superficial papule >1 cm in diameter; may be joined (e.g., psoriasis or seborrhea)

- Pustule:Elevated, superficial, distinct, purulent fluid-filled lesion (acne, impetigo)
- Vesicle: Elevated, superficial, distinct, serous fluid-filled lesion <1 cm in diameter (blister)
- Wheal: Solid, elevated area of edema with irregular shape, varied changing diameters with lighter center, pale pink in color (e.g., insect bites)

Causes vary with type of lesion but could include physical irritant such as chemical, allergic, traumatic, or infectious assault. Lesion can progress from smaller single lesion to larger or combined lesions. Secondary lesions occur with healing, additional trauma such as scratching, or infection to the site. Secondary lesion types include

- Scale: Elevated keratinized (hardened) cells, flaky, irregular thick or thin, dry or oily lesion, various size and tan, silver or white in color (e.g., psoriasis)
- Crust: Slightly elevated, dried blood, serum, or purulent exudates, various sizes, brown, red, black, tan, or pale in color (eczema or scab)
- Lichenification: Thickened epidermis, bolder skin markings caused by rubbing or irritation (chronic dermatitis)

Assessment:

- History may reveal recent infection (measles) or allergic sensitivity (contact dermatitis or drug rash).
- Physical assessment should reveal the distribution, size, shape, and arrangement of the lesions. Itching (pruritus), mild to severe, is a common symptom with some lesions.
- Other sensations may be reported such as stinging, burning, or crawling.
- Pain or tenderness may be noted with some lesions due to pressure on or irritation of nerve endings.
- Some lesions appear in association with contact with or ingestion of substances to which the client is allergic.
- Primary or secondary lesion types may be present depending on duration of the condition prior to the physical examination.
- Paresthesia (burning or numbness) or anesthesia (absence of sensation) may be reported depending on extent of nerve disruption.

Diagnostics:

- Studies are needed to rule out collagen disease or immunodeficiency disease.
- Microscopic examination.
- Cultures.
- Biopsy (skin scraping).
- Cell diagnosis (cytodiagnosis).
- Patch testing.
- Wood light examination.
- Allergic skin testing.
- Blood testing: Complete blood count, sedimentation rate

Treatment:

- Dressings are applied for the following reasons:

1. Provides a healing environment with moist gauze
2. Protects wound from infections
3. Provides compression to reduce bleeding or swelling
4. Facilitates the application of medication
5. Absorbs drainage
6. Debrides necrotic tissue
7. Controls odor
8. Reduces pain

- Topical ointment may be applied to relieve local discomfort, reduce swelling, or prevent or resolve infection (such as calamine lotion for poison ivy contact).
- Pain medication or antihistamine to relieve discomfort or irritation.
- Topical therapies: Cautery or cryosurgery (wart removal), electrodesiccation, ultraviolet therapy, laser therapy, acne therapy (chemical peel).
- Systemic medication such as antibiotic for infection or corticosteroid to reduce inflammation.

NCLEX!!! Prolonged administration of corticosteroids can temporarily suppress growth, so developmental assessments should be performed regularly.

Nursing Interventions:

- Apply topical treatments and give medications as ordered and monitor for side effects.
- Monitor for healing or lack of healing and report findings as indicated so treatment can be changed if needed.
- Teach parents and child to avoid skin irritants such as poison ivy, oak, or sumac and any objects or clothing that touched these plants.
- Teach child and parents how to care for skin and lesions:

1. Specify amount and frequency of ointment application; stress that extra ointment or increased frequency could increase systemic levels in children so prescribed schedule should be adhered to.
2. Caution parents to use clean gauze or applicator for each area being cleaned to avoid spread of debris.
3. Teach parents and child about lesion relative to method of spread and anticipated time for healing because visible skin lesions may cause distress due to concern about appearance and self-esteem concerns as well as concerns that lesion may be contagious.

III. PSORIASIS

A skin overgrowth and flaking of unknown origin that may be triggered by stress and has a possible hereditary association. Seldom occurs in children <6 years of age.

Assessment:

- Red skin patches with coarse scales over extremities and trunk, scalp, and face
- Pruritus (itching)

Treatment:

- Sunlight or ultraviolet light exposure
- Topical corticosteroids
- Psoralen-ultraviolet A(PUVA)
- Tar ointment
- Trihydroxy-anthracene
- Emollients to relieve dry skin
- Keratolytic agents to remove skin overgrowth
- Humidifier to increase moisture

Nursing Intervention:

- Instruct client and family to follow measures to maintain moisture for skin.
- Explain that psoriasis is not contagious and cannot be transferred from person to person.

IV. SCABIES

Infestation by scabies mite occurs after exposure and an impregnated female scabies mite deposits eggs in the epidermis of the skin.

Assessment:

- Pruritus from the inflammatory response.
- Deep scratches from the itching.
- Maculopapular lesions in involved areas.
- Infants have eczema-like lesions as well as papules or vesicles.
- Lesions may be located on hands and wrists (child <2 years of age) or feet and ankles (child >2 years of age).

NCLEX!!! A child who is mentally challenged or has difficulty communicating may not be able to explain the discomfort; thus examination of the skin and anticipatory treatment for itching may be needed.

Diagnostic: Microscopic examination of a scraping from the lesion

Nursing Interventions:

- Apply cream to all skin surfaces being careful to use gloves.
- Teach family and older child/adolescent the importance of following the prescribed regimen:

1. Avoid applying cream after hot bath and avoid contact with eyes.
2. Leave cream on skin for full 8 to 14 hours.
3. Apply cream under nails.
4. Explain that itching may persist after mites are killed because skin is still raw and needs to heal.
5. All clothes and bed linens must be washed in hot water and dried at high-heat settings.

V. LYME DISEASE

This tick-borne condition is caused by a spirochete (Borrelia burgdorferi) that enters the bloodstream through tick saliva and feces when the victim is bitten by a deer tick. The tick must feed for up to 72 hours to transmit the bacteria. Although most will remove the tick within this time frame, some will be unaware of the bite.

Assessment:

- Bull's-eye rash (erythema migrans) at the site of the bite for 3 weeks following the bite.
- In stage I, from 3 days to a month after bite:

1. May note a small erythematous papule that progresses to larger raised bordered lesion (erythema chronicum migrans [ECM]) commonly found in the axilla, thigh, or groin.
2. May report warmth, burning, or itching at the site of lesion.
3. Multiple small secondary lesions may be noted on body except palms and soles.
4. Systemic symptoms may be noted such as fatigue, anorexia, fever, headache, stiff neck, malaise, lymphadenopathy, splenomegaly, conjunctivitis, sore throat, abdominal pain, and cough.
5. Generalized aches.

- Stage II occurs 2 to 11 weeks following stage I lesion and involves neurologic, cardiac, and musculoskeletal symptoms:

1. Headache is an early symptom.
2. Later symptoms include cranial nerve palsy, peripheral radiculoneuritis, or meningoencephalitis.
3. Cardiac symptoms may include atrioventricular heart block, syncope, palpitations, chest pain, dyspnea, and bradycardia.

- Stage III is a late stage with musculoskeletal discomfort:

1. Tendon, muscle, and synovia pain that develops months to years after initial bite.
2. Chronic arthritis with occasional joint swelling, particularly knees with exacerbations and remissions.
3. Deafness, keratitis, or encephalopathy may be noted in late stages.

Diagnostics:

- History and physical data is supportive of the diagnosis.
- Serum: Elevated IgM antibody.
- Lyme titers: B. burgdorferi present.
- Enzyme-linked immunosorbent assay (ELISA): Identifies antibodies to B. burgdorferi.
- Western blot test: Identifies antibodies to B. burgdorferi.
- Serologic testing (results could be inaccurate; useful in late stages):

1. By indirect immunofluorescence (IFA)
2. By enzyme immunoassay (EIA)

Treatment:

- A vaccine can be given against Lyme disease for high-risk persons.
- Administer corticosteroids to reduce inflammation.
- Maintain fluid and electrolyte balance to prevent seizures.
- Antibiotics often prevent development of stage II:

1. Doxycycline (Vibramycin) or amoxicillin (Amoxil), for children >8 years of age.
2. Amoxicillin (Amoxil) or penicillin for children <8 years of age.
3. Cefuroxime (Ceftin) or erythromycin (E-Mycin) if child is allergic to penicillin.
4. Tetracycline (Sumycin).
5. Administer ceftriaxone IM or IV.

NCLEX!!! Avoid administering tetracycline (Sumycin) in children <8 years of age because this medication discolors the teeth.

Nursing Interventions:

- Assess closely for ticks on skin.
- Monitor for nodules or other symptoms of Lyme disease.
- Assess closely for risk factors for tick bite and Lyme disease:

1. History of time in high tick areas (northeastern and north central United States)

- Educate parents and children regarding the condition and the protective measures to avoid tick bite:

1. Wear light-colored long-sleeved shirts and pants.
2. Avoid grass and shrubbery; walk in clear trails.
3. Use appropriate insect repellant.
4. Inspect pets and maintain flea and tick collar or treatments.
5. Check bare skin for ticks, including neck, armpits, scalp, and groin area.
6. Remove any ticks, being careful to get all portions of the tick:

- Grasp tick close to skin with tweezers, trying not to squeeze or crush the tick.
- Pull tick in a steady motion, straighten up with steady pressure.
- Use a sterile needle to remove any remaining parts and then clean the site.
- Wash hands with soap and disinfectant immediately after removing the tick.

VI. IMPETIGO

Impetigo is a superficial skin infection caused most often by Staphylococcus aureus. Children who come in contact with infectious persons are at highest risk for spread of the infection. Commonly found in toddlers or preschoolers.

Assessment:

- May begin with red macule that becomes a vesicular lesion.
- Bullous lesions may be noted in neonatal form.
- Lesions found on body surface, usually trunk, extremities, face, perineum, or buttocks.
- Lesions vary in size from millimeters to several centimeters.

- Lesions often spread peripherally from one skin area to another without precautions.
- Lesions rupture easily and leave a red moist eroded area.
- Minimal crusting in neonates.
- Honey-colored crusting may be noted in older infants and children.
- May be noted in addition to eczema.
- Pruritus (itching) often noted.

Diagnostics: Culture may be performed and commonly reveals S. aureus infection.

Treatment:

- Isolation until treatment instituted
- Systemic antibiotics: Oral or intravenous if severe lesion
- Topical bactericidal ointment such as mupirocin (Bactroban)
- Burrow solution (1:20 solution) compress to skin to remove crusts, debris

Nursing Interventions:

- Teach child and family the importance of handwashing and not touching lesions to minimize the spread of infection to other areas of the body or to other persons.
- Explain that lesions often heal without scaring if no secondary infection occurs.
- Teach child and family to apply ointment and compress as ordered.