

INTEGUMENTARY SYSTEM: AN OUTLINE

LAYERS OF THE INTEGUMENT:

A. Epidermis

1. Stratum corneum
 - a. Keratin
2. Stratum basale
 - a. Melanin

B. Dermis

1. Arrector pili
2. Blood Vessels
3. Nerve Endings

C. Subcutaneous layer (superficial fascia, hypodermis)

APPENDENDAGES TO THE INTEGUMENT

- A. Sebaceous glands
- B. Sudoriferous glands
 1. Eccrine glands
 2. Apocrine glands
 3. Mammary glands
- C. Ceruminous glands
- D. Hair
- E. Fingernails and toenails

FUNCTIONS OF THE INTEGUMENTARY SYSTEM

- A. Protection
- B. Temperature regulation
- C. Sensory reception
- D. Cutaneous absorption

DISEASES OF THE INTEGUMENTARY SYSTEM

GENERAL TERMINOLOGY

- A. Skin Lesions:
 - a. Macule
 - b. Papule
 - c. Vesicle
 - d. Blister
 - e. Pustule
- B. Dermatosis
- C. Dermatitis

D. Pruritis

TUMORS

- A. Neoplasms
- B. Hyperplasia
- C. Metastasis
- D. Benign tumors
 - a. Osteoma
 - b. Lipoma
 - c. Nevus
 - d. Papilloma
 - e. Myoma
 - f. Angioma
 - g. Adenoma
 - h. Chondroma
 - i. Lymphoma

MALIGNANT TUMORS

- j. Mutation
- k. Sarcoma
- l. Carcinoma
 - i. Melanoma
 - ii. Basal cell carcinoma
 - iii. Squamous cell carcinoma

BACTERIAL DISORDERS

- A. Cellulitis:
 - a. Cause: widespread bacterial infection (streptococcus)
 - b. Contraindications/Indications: may be associated with a contagious condition, consult with the client's doctor
- B. Impetigo:
 - a. Cause: bacterial infection (strep or staph)
 - b. Contraindications/Indications: avoid affected area, consult with client's doctor
- C. Folliculitis:
 - a. Cause: bacterial infection (staph, pseudomonas)
 - b. Contraindications/indications: do not massage infected region; refer to doctor
- D. Acne:
 - a. Cause: hyper secretion of sebum (oil) owing to hormonal changes in the body
 - b. Contraindications/indications: not contagious; avoid massage of the affected areas if they are painful, itching, or weeping

VIRAL DISORDERS:

- A. Fever Blisters (herpes simplex) fever blisters, contagious
 - a. Herpes simplex I virus
 - b. Contraindications/Indications: do not massage affected area
- B. Chicken pox
 - a. Cause: varicella, (herpes zoster) contagious
 - b. Contraindications/Indications: do not massage
- C. Shingles: (herpes zoster)
 - a. Cause: delayed or recurrent form of VZV infection, virus remains dormant in nerve tissue after a typical case of chickenpox, becomes reactivated years later
 - b. Contraindications/Indications: do not massage, refer to doctor
- D. Warts (verrucae) contagious infection of epidermis with some form of human Papilloma virus, many varieties
 - a. Cause: viral infection
 - b. Contraindications/Indications: contagious, do not massage affected areas

FUNGAL DISORDERS:

- A. Tine pedals: (athletes foot)
 - a. Cause: fungus
 - b. Contraindications/Indications: avoid affected areas, refer to physician
- B. Tinea cruris: (jock itch)
 - a. Cause: fungus infection in groin
 - b. Contraindications/Indications: avoid direct contact with client; refer to doctor

PARASITIC DISORDERS:

- A. Scabies: itchy eruptions that usually affect the webs of the hands, wrists, elbows, gluteal cleft, or nipples; papules and vesicles are very common. Contagious
 - a. *Sarcoptes scabiei* (itch mite) infection (Mange)
 - b. Contraindications/Indications: avoid affected area; refer to doctor
- B. Pediculosis: (crabs) itchiness scalp, pubes, etc
 - a. Cause: blood-sucking lice transmitted through personal contact and sharing of combs, brushes, bedding, towels, clothing
 - b. Contraindications/Indications: avoid direct contact with client, refer to physician

OTHER SKIN DISORDERS:

- A. Psoriasis: chronic skin disorder
 - a. Cause: unknown, suspected genetic influence to triggers: emotional stress, skin injury, and/or medication

- b. Contraindications/Indications: avoid affected areas if painful, itching, or weeping. Massage can reduce stress. Refer to doctor.
- B. Scleroderma: (now called progressive system sclerosis) [sclera=hard, derma=skin]
 - a. Cause: autoimmune disorder; specific cause unknown
 - b. Contraindications/Indications: avoid affected region; refer to doctor
- C. Atopic eczema (atopic dermatitis)
 - a. Cause: unknown, may be an allergic reaction
 - b. Contraindications/Indications: do not massage any areas that are painful, itchy, or weeping
- D. Lupus erythematosus: chronic inflammatory disease
 - a. Cause: autoimmune disorder of unknown cause in which the body produces an immune response against the nuclear components of the cell; suspected factors include stress, sunlight, and infections
 - b. Contraindications/indications: refer to doctor
- E. Urticaria (hives); itchy skin eruption
 - a. Cause: usually an allergic response to an allergen or irritating agent; may be influenced by psychogenic factors (e.g. stress)
 - b. Contraindications/indications: do not massage any affected areas that are painful, itchy or weeping
- F. Decubitus ulcers (bedsores) dark patches or ulcerations of the skin that lead to necrosis of the skin
 - a. Cause: prolonged pressure over bony prominences, usually from lying or sitting in one position for too long without moving
 - b. Contraindications/Indications: do not massage affected area; massage as a preventive measure is most effective in improving circulation and alleviating pressure

BURNS:

- A. Contraindications/Indications: consult with client's doctor; avoid the area if painful
 - B. First-degree burn – affects the epidermis, redness of the skin is usually followed by shedding of the skin
 - C. Second-degree burn – affects the epidermis and dermis; redness and blistering; can leave scars when healed
 - D. Third-degree burn – affects all layers of the skin and frequently some of the underlying tissue (e.g. muscle); open wounds with black charring and white patches of necrotic tissue; leaves scars when healed
- I. Be careful of the types of lotion, oils and creams you use. An ingredient in one of these products might be an irritant, causing an outbreak of hives or other allergic reactions to people with allergic conditions. Try to use hypoallergenic products, and ask all clients about any known allergies they may have.

DISEASES IN OTHER SYSTEMS THAT AFFECT THE INTEGUMENT: COMMONLY EXPERIENCED BY THE MASSAGE THERAPIST

- A. Respiratory System:
 - a. **COPD** (chronic obstructive pulmonary disease)
 - i. **Asthma**
 - ii. **Chronic bronchitis**
 - iii. **Emphysema**
- B. CardioVascular System:
 - a. **Anemia:**
 - i. **Sickle cell**
 - ii. **Iron deficiency**
 - iii. **Thalasemia major and minor**
 - b. **Necrosis**
 - c. **Gangrene**
 - d. **Thrombus/embolus**
 - e. **Hypoxia**
 - f. **Hypertension**
 - g. **Raynaud's disease**
 - h. **Atherosclerosis**
- C. Digestive system:
 - a. **Diabetes**
- D. Lymph system:
 - a. **Lymphedema**
 - b. **Allergy**
 - c. **Acquired Immunodeficiency syndrome (AIDS)**
 - d. **HIV infection**

INTEGUMENTARY SYSTEM AND BODY MEMBRANES

CLASSIFICATION OF BODY MEMBRANES

- A. *Classification* of body membranes
 - a. **Epithelial membranes** – composed of epithelial tissue and an underlying layer of connective tissue
 - b. **Connective tissue membranes**—composed largely of various types of connective tissue
- B. **Epithelial membranes**
 - a. **Cutaneous** membrane—the skin
 - b. **Serous** membrane—*simple Squamous epithelium on a connective tissue basement membrane*
 - i. Types:
 - 1. **Parietal**—lines walls of body cavities
 - 2. **Visceral**—covers organs found in body cavities
 - ii. Examples
 - 1. **Pleura**—parietal and visceral layers line walls of thoracic cavity and cover the lungs
 - 2. **Peritoneum**—parietal and visceral layers lines walls of the abdominal cavity and cover the organs in that cavity
 - iii. Diseases
 - 1. **Pleurisy**—inflammation of the serous membranes that line the chest cavity and cover the lungs
 - 2. **Peritonitis**—inflammation of the serous membranes in the abdominal cavity that line the walls and cover the abdominal organs
 - c. **Mucous** membranes
 - i. Line body surfaces that open directly to the exterior
 - ii. Produce mucus, a thick secretion that keeps the membranes soft and moist
- C. **Connective tissue** membranes
 - a. Do not contain epithelial components
 - b. Produce a lubricant called synovial fluid
 - c. Example are the synovial membranes in the spaces between joints and in the lining of bursal sacs

THE SKIN

- A. Structure—two primary layers called epidermis and dermis
 - a. **Epidermis**
 - i. Outermost and thinnest primary layer of the skin
 - ii. Composed of several layers of stratified **Squamous epithelium**

- iii. **Stratum germinativum**—innermost layer of cells that continually reproduce and new cells move toward the surface
- iv. As cells approach the surface they are filled with a tough, waterproof protein called **keratin** and eventually flake off
- v. **Stratum corneum**—outermost layer of keratin filled cells
- vi. Pigment containing layer—epidermal layer that contains pigment cells called melanocytes which produce the brown pigment **Melanin**
- vii. Blisters caused by breakdown of the union between cells or primary layers of skin
- viii. Dermal-epidermal junction—specialized area between two primary layers of skin

b. Dermis

- i. Deeper and thicker of the two layers, composed largely of connective tissue
- ii. Upper area of dermis characterized by parallel rows of peglike dermal papillae
- iii. Ridges and grooves in dermis form pattern unique to each individual (basis of fingerprinting)
- iv. Deeper areas of dermis filled with network of tough collagenous and stretchable elastic fibers
- v. Number of elastic fibers decreases with age and contributes to wrinkle formation
- vi. Dermis also contains nerve endings, muscle fibers, hair follicles, sweat and sebaceous glands and many blood vessels

B. Appendages of the skin

a. Hair

- i. Soft hair of fetus and newborn called lanugo
- ii. Hair growth requires epidermal tube like structure called hair follicle
- iii. Hair growth begins from hair papilla
- iv. Hair root lies hidden in the follicle; visible part of hair is called the shaft
- v. **Alopecia**—hair loss
- vi. **Arrector pili**—specialized smooth muscle that produces “goose pimples” and causes hair to stand up straight

b. Receptors

- i. Specialized nerve endings—make it possible for skin to act as a sense organ
- ii. *Meissner's corpuscle*—detects light touch
- iii. *Pacinian corpuscle*—detects pressure

c. Nails

- i. Produced by epidermal cells over terminal ends of fingers and toes
- ii. Visible part called the nail body
- iii. Root lies in a groove and is hidden by cuticle
- iv. Crescent shaped area nearest root is called lunula
- v. Nail bed may change color with change in blood flow

d. Skin glands

- i. Types
 - 1. Sweat or **sudoriferous**
 - 2. **Sebaceous**
- ii. Sweat or sudoriferous glands
 - 1. types
 - a. **Eccrine** sweat glands
 - i. Most numerous, important and wide-spread of the sweat glands
 - ii. Produce perspiration or sweat which flows out through pores on skin surface
 - iii. Function throughout life and assist in body heat regulation
 - b. **Apocrine** sweat glands
 - i. Found primarily in axilla and around genitalia
 - ii. Secrete a thicker, milky secretion quite different from Eccrine perspiration
 - iii. Breakdown of secretion by skin bacteria produces odor
- iii. **Sebaceous glands**
 - 1. Secrete oil or sebum for hair and skin
 - 2. Level of secretion increases during adolescence
 - 3. Amount of secretion regulated by sex hormones
 - 4. Sebum in sebaceous gland ducts may darken to form a blackhead
 - 5. Acne vulgaris—inflammation of sebaceous gland ducts

C. Functions of the skin

- a. *Protection* – first line of defense
 - i. Against infection by microbes
 - ii. Against ultraviolet rays from sun
 - iii. Against harmful chemicals
 - iv. Against cuts and tears
 - b. *Temperature regulation*
 - i. Skin can release almost 3000 calories of body heat per day
 - 1. Mechanisms of temperature regulation
 - a. Regulation of sweat secretion
 - b. Regulation of flow of blood close to the body surface
- c. *Sense organ activity*
 - 1. Skin functions as an enormous sense organ
 - 2. Receptors serve as receivers for the body keeping it informed of changes in its environment

A. Skin lesions

- a. Elevated lesions—cast a shadow outside their edge
 - i. **Papule** – small, firm raised lesion
 - ii. **Plaque** – large raised lesion
 - iii. **Vesicle** – blister
 - iv. **Pustule** – pus-filled lesion
 - v. Crust – scab
 - vi. **Wheal** (hive) – raised, firm lesion with a light center
- b. Flat lesions – do not cast a shadow
 - i. **Macule** – flat discolored region
- c. Depressed lesions cast a shadow within their edges
 - i. **Excoriation** – missing epidermis, as in a scratch wound
 - ii. **Ulcer** – craterlike lesion
 - iii. **Fissure** – deep crack or break

B. Burns

- a. Treatment and recovery or survival depend on total area involved and severity of depth of the burn
- b. Estimating body surface area using the “**rule of nines**” in adults
 - i. Body divided into 11 areas of 9% each
 - ii. Additional 1% of the body surface is around the genitals
- c. Classification of burns
 - i. **First degree** (partial thickness) burns—only surface layers of epidermis involved
 - ii. **Second-degree** (partial thickness) burns—involve the deep epidermal layers and always cause injury to the upper layers of the dermis
 - iii. **Third degree** (full thickness) burns—characterized by complete destruction of the epidermis and the dermis
 1. May involve underlying muscle and bone
 2. Lesion is insensitive to pain because of destruction of nerve endings immediately after injury—intense pain is soon experienced

C. Skin infections

- a. **Impetigo**—highly contagious streptococcal or staphylococcal infection
- b. **Tinea**—fungal infection (**mycosis**) of the skin, several forms occur
- c. Warts—benign neoplasms caused by papilloma virus
- d. Boils—**furuncles**; staph infection in hair follicles

D. Vascular and inflammatory skin disorders

- a. **Decubitus ulcers** (bedsores) develop when pressure slows down blood flow to local areas of the skin
- b. **Urticaria** or hives—red lesions caused by fluid loss from blood vessels
- c. **Scleroderma**—disorder of the vessels and connective tissue characterized by hardening of the skin; two types localized and systemic
- d. **Eczema**—common inflammatory condition characterized by papules, vesicles and crusts; not a disease itself but a symptom of an underlying condition

- e. **Psoriasis**—chronic inflammatory condition accompanied by scaly plaques
- E. **Skin cancer**
 - a. Three common types
 - i. **Squamous cell carcinoma**—most common, characterized by hard, raised tumors
 - ii. **Basal cell carcinoma**—characterized by papules with a central crater; rarely spreads
 - iii. **Melanoma**—malignancy in a nevus (mole); the most serious type
 - b. The most important causative factor in common skin cancers is exposure to sunlight
 - c. **Kaposki sarcoma**, characterized by purple lesions, associated with **AIDS** and other immune deficiencies.