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DISEASES OF THE SKIN

SYLLABUS FOR STUDENTS OF ELECTROLOGY

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DISEASES OF THE SKIN

Introduction

The electrologist is in a unique position to examine the client's skin. It is necessary to be able to recognize and distinguish common skin lesions (growths), both to avoid treatment of contraindicated lesions and to refer clients for evaluation when appropriate.

LAYERS OF SKIN

- a. **Epidermis.** The outer layer of the skin composed of cells called keratinocytes.
- b. **Dermis.** Located directly beneath the epidermis, this layer is thicker than the epidermis and is composed of connective tissue containing lymphatics, nerves and nerve endings, blood vessels, sebaceous and sweat glands, and collagen and elastic fibers.

The subcutaneous layer is the fatty tissue beneath the two layers of the skin.

MORPHOLOGY USED IN DERMATOLOGY

Skin lesions are classified as either primary or secondary. Primary lesions are those that first appear unaltered on the skin, secondary lesions are the result of changes in primary lesions brought about by natural evolution or by manipulation of the skin lesions, such as rubbing or scratching.

Primary Skin Lesions

1. **Macules** are flat lesions of any size. They can not be palpated and their borders are usually sharply circumscribed.
2. **Papules** are lesions which are raised above the skin, under 1 cm in size (about one-half inch).
3. **Plaques** are papules greater than 1 cm in diameter. The surface of papules and plaques may be smooth, rough (warty) or scaly.
4. **Nodules** are elevated lesions which are located deep in the skin. Most importantly, the skin can be moved over the top of the lesion.
5. **Purpura** results from hemorrhage into the skin. The hallmark of purpura is in the ability to blanch the red-purple color with pressure. Small lesions are called *petechiae*. Larger lesions are called *ecchymoses*, or bruises.
6. **Pustules** are focal accumulations of inflammatory cells and serum in the skin. Nicking a pustule releases yellow or white pus.
7. **Abscesses** are circumscribed collections of pus which involve the deeper layers of the skin.
8. **Wheal** is a synonym for hive. They result from a transient reaction in the dermis. The redness is caused by dilation of blood vessels and the elevation is caused by edema, or leaking of serum into the dermis from blood vessels. They often have an irregular border and may combine together to form large geographic shapes.
9. **Vesicles** are sharply marginated, elevated lesions which contain a clear fluid, like a small blister. Vesicles larger than 1 cm are called *bullae*.

10. Telangiectasis are dilated, visible superficial blood vessels.

Secondary Skin Lesions

Secondary skin lesions are caused either by further development of a primary skin lesion or by further injury to that lesion. There are several types:

1. Crusts are yellow-brown to black collections of serum and inflammatory cells on the surface of the skin.

2. Scales are white to brown flakes on the skin and should be differentiated from crusts.

3. Ulcers are depressed lesions in which the epidermis and at least part of the dermis has been lost. They frequently heal with scarring.

4. Fissures are linear ulcers.

5. Sinuses are connections between the skin surface and an underlying structure.

6. Atrophy is loss of substance in the skin. Superficial atrophy is characterized by loss of skin markings, variation in pigmentation and transparency of skin so that the blood vessels are seen. Dermal and subcutaneous atrophy produces a depression which is covered by normal appearing skin.

7. Sclerotic lesions are flat to slightly elevated because the skin feels hardened and thickened.

8. Lichenification is the superficial thickening of the skin accompanied by accentuation of the skin markings. It is usually due to chronic rubbing or scratching.

9. Erosions are moist, red, shiny, circumscribed lesions, lacking the upper layer of skin usually from the rupture of a bulla. Linear erosions caused by scratching are called excoriations.

10. Cysts are very sharply circumscribed fluid-filled lesions, similar to nodules which are solid. Skin can usually be moved over the top of cysts.

11. Scar. Fibrous tissue where a skin lesion has healed.

12. Keloid. A scar that is heaped up because of excessive growth of collagen.

INFLAMMATORY SKIN DISEASES

DERMATITIS

Dermatitis is a general term meaning "inflammation of the skin". Eczema is synonymous and is a term more commonly used by patients. There are several causes of dermatitis, which may be acute or chronic. Acute dermatitis is characterized by erythema (redness), edema, oozing, crusting and sometimes vesicles. Chronic dermatitis is characterized by erythema, dryness, scaling and is often accompanied by secondary changes of fissures, lichenification or excoriations. Some of the more common types include the following:

Atopic dermatitis. This is a genetic disease in persons who personally have other allergies such as hayfever and asthma or who have relatives who do. It often begins as an acute dermatitis which tends to become chronic and accompanied by lichenification and excoriation because of the extreme pruritus. Areas most commonly affected are the flexures behind the knees and in the crook of the arms, hands and face.

Contact dermatitis. This may be acute or chronic and is caused by contact with substances (allergens) to which the individual is allergic. Common allergens include poison oak, nickel(found in metal jewelry, coins, etc.), cosmetics and lotions, and sunscreens. Areas most commonly involved are the hands, eyelids and areas which contact jewelry, such as ear lobes; neck and wrists.

BACTERIAL SKIN INFECTIONS

Impetigo. Superficial streptococcal and/or staphylococcal infection, characterized by vesicles, pustules and honey-colored serum crusts. It is very contagious and often spreads in groups of people in close proximity, such as school children.

Folliculitis. Infection of the hair follicle, often caused by staphylococcus. They may be superficial or, in areas where the follicles are deeper such as the beard and scalp, more deep-seated with chronic inflammation and nodule formation. These deep staph nodules are called furuncles(boils). Groups of furuncles are called carbuncles, and should be treated with antibiotics to prevent scarring and sinus tract formation.

Cellulitis. An acute inflammatory process in the skin, usually caused by staphylococcus. When superficial and sharply demarcated, the process is called **erysipelas**. Cellulitis may spread rapidly by breaking down cell membranes. Prompt medical attention is required.

FUNGAL SKIN INFECTIONS

Superficial fungal infections, called dermatophytosis, tinea, or ringworm are the most common form and may be caused by several different fungi, and have very characteristic presentation, depending on the site of infection and the causative organism. The following summarizes the most common types:

Tinea corporis. Round or figurative shapes on the body with scaling, particularly around the periphery or edge. Inflammatory response is variable. When acute and round, it is commonly called "ringworm".

Tinea pedis. This occurs on the feet. When acute with fissures and vesicles, especially between the toes, it is commonly referred to as athlete's foot. It can be very extensive, involving the entire sole, and show little inflammation, even infecting the nails(onychomycosis)

Tinea capitis. This is fungal infection of the scalp and can present as patches of hair loss with non-inflammatory scaling or it can present as a very acute process with boggy erythema, oozing and hair loss. Early treatment is important to prevent permanent loss of hair.

Tinea cruris. This condition is commonly called "jock itch" and is dermatophytosis of the groin. It is much more common in males. Areas involved are erythematous, scaling and pruritic.

Tinea versicolor. This condition is caused by a fungus-like organism, so not a true dermatophyte. It commonly occurs on the trunk and causes non-inflammatory patches of fine scaling, which appear light in dark-skinned individuals, and dark in fair-skinned individuals (hence the name). The causative agent is felt to be a normal skin inhabitant, which grows more aggressively in some people, especially during hot and humid weather.

YEAST INFECTIONS OF THE SKIN

Candida albicans is the most common pathogen and causes a variety of conditions. Diabetics are particularly susceptible. Skin areas frequently involved include beneath the breasts, groin of men and women, fingerwebs and gluteal cleft. The areas have erythematous, confluent papules, sometimes with pustules at the margins. It is usually pruritic. It is a common cause of diaper dermatitis in infants. Mucous membranes may be involved, including the oral cavity(thrush), and vagina which causes discharge and itching. Women on antibiotic therapy are particularly susceptible.

VIRAL INFECTIONS OF THE SKIN

Many of the "childhood diseases", measles, mumps, chicken pox are caused by viruses. Those described here deal only with those chronic viral infections likely to be encountered in practice.

Warts are caused by the human papilloma virus(HPV) of which there are several subtypes. All warts are passed by direct contact with infected persons or by contact with fomites such as communal showers and swimming pools. Common clinical presentations include: 1) common warts seen as hyperkeratotic papules on the hand and fingers on the hands
2) plantar warts on the soles of the feet, aggregates of thickened, inward growing warts
3) Planar or flat warts of the face or legs, which may be spread by scratching or shaving
4) genital warts of the vagina, labia, or penis or anus(condyloma acuminata). These are small to large, moist, soft warts, sometimes in clusters. Recent evidence suggests that chronic infection of some subtypes of genital warts may cause cancer, especially cervical cancer.

Herpes virus. In this class are two main types, that which causes "cold sores" or "fever blisters" (herpes simplex), and that which causes "shingles"(herpes zoster).

Herpes simplex, type I, causes painful clusters of vesicles and crusts, often recurring in the same location around the mouth or nose. Herpes simplex, type II, causes similar appearing lesions on the cervix, vagina, labia and penis.

Molluscum contagiosum are caused by warts of the pox virus family. They are especially common and numerous in children and appear as small pink papules with a central indentation.

PARASITIC INFECTIONS OF THE SKIN

Parasites cause significant problems, especially in children. There are two major varieties.

1. Scabies. Scabies is an infection caused by a microscopic mite, which burrows into the epidermis, causing a hypersensitivity reaction. The most significant symptom is intense itching(pruritus). Common areas of infection include the finger webs, anterior wrist, elbows, axillary regions, areola of the breast, male genitals and lower buttocks. It is transmitted by direct contact with contaminated persons. Secondary bacterial infection is common.

2. Pediculosis(lice). Pediculi are parasites called lice that attach to the skin and extract blood from the host. When they pierce the skin they inject a toxic secretion that causes irritation, itching and inflammation. There are several types of lice, and they each have a tendency to be found in a particular area of the body.

- a. Pediculosis capitis is commonly found on the scalp, eyebrows and eyelashes.
- b. Pediculosis corporis is frequently seen on the shoulders, buttocks and abdomen.
- c. Pediculosis pubis is genital lice(often called "crab" lice).

DISORDERS OF HAIR, GLANDS AND VESSELS OF THE SKIN

Alopecia

Alopecia means "hair loss". It can result from many causes and differ in appearance.

Common causes include:

- a. Male pattern baldness which causes hair loss in the temples and top of scalp.
- b. Female diffuse thinning which is caused by normal levels of androgens(male hormones) as is male pattern baldness, but hair in affected females becomes diffusely thin on top, rather than totally bare.
- c. Alopecia areata which usually presents as round patches of hair loss. In some instances it can be very extensive, affecting much or all hair on the body. Since the hair follicles beneath the affected areas remain viable, regrowth is possible and this sometimes occurs spontaneously. There are also several types of treatment that can be used to promote regrowth.

Acne Vulgaris

This is a common inflammatory condition of the sebaceous oil glands, manifesting as blackheads(comedones), papules, pustules and inflamed nodules. It is caused by a complex interaction between bacteria, overproduction of sebum and the release of sex hormones, usually at puberty. Deep acne may cause disfiguring scars.

Rosacea

Rosacea is a chronic skin eruption featuring dilation of the small facial blood vessels, flushing of the face(especially in the region of the cheeks and nose) and sometimes papules and pustules. There may also be inflammatory lesions of the eyes. The cause of rosacea is unknown, although it is aggravated by stress, infections, hot foods that cause facial flushing(coffee, spicy foods), sunlight and physical activity. There are none of the comedones associated with acne, which otherwise has similar appearance to rosacea.

DISORDERS OF SKIN PIGMENTATION

Vitiligo

This disorder causes loss of pigment-producing cells(melanocytes) of the epidermis,

leading to loss of skin pigmentation in patches. It is especially obvious on people with dark skin. Areas affected are over the joints such as the knuckles, elbows, ankles, and around the mouth and lips.

COMMON SKIN LESIONS

Actinic keratosis are a pre-cancerous condition of the upper layer of the skin. They are caused by prolonged, chronic exposure to the sun and are most often found on the face, the chest, the nape of the neck and the back of the hands. The skin can look red or brownish in these areas and will be slightly raised, roughened or scaly. They are often slightly tender to touch, especially when exposed to sunlight. Treatment is recommended because, if they are not treated, they can turn into skin cancers called squamous cell carcinomas.

Cherry angiomas are very common in Caucasians. They appear as small, round red spots composed of small blood vessels called capillaries and can be raised or flat. They often occur on the trunk and less commonly on the extremities or face.

Lentigos are small, flat, brown circular spots which are benign and are not related to moles. Some individuals get large numbers of them on the face and back of the hands as they get older. These are caused by sun exposure and called **SOLAR LENTIGOS** (often called liver spots). They are benign.

Sebaceous hyperplasia is a benign growth that most often occurs on the face of middle aged to elderly people. These are enlarged oil glands in the skin. They look like yellow or white papules.

Seborrheic keratosis are benign growths of the upper layers of the skin. They are very common in middle-aged or older people of both sexes. They occur most commonly on the face, scalp and trunk and often people have many of them. They may begin as a tan or light brown spot with a slightly rough, wart-like surface. They can grow larger and darker in time, and occasionally the surface will crumble off and then reform. Seborrheic keratoses do not become skin cancers. Although they don't need to be treated, they can be symptomatically annoying, irritated and itchy.

Spider angiomas are small growths of blood vessels (small arteries) under the skin. They often have a central red spot with a spider-like lines radiating outward.

Venous lake is a group of large dilated blood vessels (veins) which resembles a blood blister. It is most commonly seen on the ears, the face, or the lips. Although venous lakes can look quite dark, they are completely benign.

Skin tags are harmless tags or outgrowths of skin that grow around the neck, under the arms and sometimes in the groin. They appear to be caused by genetic tendency and worsened by friction in areas where rubbing occurs.

Milia are tiny white cysts that appear on the face and chest. They can be produced by use of some cosmetics, but many people seem to have genetic tendency to form them.

Dermatofibromas are benign pea-sized growths that occur on the arms and legs. They are firm to touch and attached to the overlying skin which may be darker than the surrounding skin. They are composed of fiber bundles and may be single or multiple.

Nevus(mole). A nevus is a neoplasm(growth) formed of melanocytes that looks like a tan, black or brown macule, papule or nodule.

Lipoma. This neoplasm is formed primarily of lipocytes or fat cells. It appears as a soft, movable, subcutaneous nodule and appears commonly on the trunk, back of the neck or the forearms. They may be single or multiple.

Sebaceous cyst(wen). This is a slow-growing benign cyst containing keratin and sebum. The mass is compressible and may occasionally become inflamed.

MALIGNANT TUMORS

a. **Basal cell carcinoma** is the most common form of skin cancer. Caused by sun damage, it can present itself as a persistent open sore, a red patch, a smooth growth(sometimes with crusting), a scar-like area or a raised pigmented or translucent nodule. It most frequently occurs on the face and develops steadily. Basal cell carcinoma is always curable, but if left untreated it will continue to grow in size resulting in further tissue damage. In some cases they can be aggressive and be larger than they appear.

b. **Squamous cell carcinoma** is the second most common skin cancer. Although usually found on the face, lips, mouth and rim of the ear, it can be found on any part of the body. It can appear as an elevated growth and as a persistent open sore or scaly patch. These lesions can occasionally bleed or crust. If left untreated this type of cancer will invade underlying tissues and, in a small percentage of cases, it can spread to other areas of the body(metastasize).

c. **Malignant melanoma** is the most aggressive type of skin cancer. It can, however, be curable if recognized and treated in the early stages. They often appear as a tan, brown or black macule on the skin and sometimes arise in pre-existing moles. Any lesion that has an asymmetric shape, an irregular border, multicolored pigmentation or that is larger than 6mm(the diameter of a pencil eraser) should be evaluated by a dermatologist as a possible melanoma. If undetected, this cancer eventually metastasizes to other parts of the body. Therefore, prompt recognition and treatment is essential.