THE SKIN PHYSICAL EXAMINATION

INTRODUCTION

Among the many aspects of the physical examination, the diagnosis of skin disorders requires a unique approach. It demands the diagnostician’s ability not only to observe and interpret but also to use new language – the language of the dermatologist. The purpose of this handout is to give you the tools to perform a thorough dermatologic history and examination, to use a new set of terms to describe skin findings, and to be able to recognize some of the most common dermatologic conditions.

Numerous disease states may be manifested in the skin. Pathology can be divided into two categories: 1. Abnormal findings may represent a disease process limited exclusively to skin, or 2. They may reflect a systemic illness. For example, poison ivy contact dermatitis is a process affecting the skin alone. On the other hand, a viral exanthem such as the rash of measles reflects a systemic infection affecting other organ systems in which additional findings and symptoms are present. In a more extreme case, the presence of serious systemic illness may be heralded by skin involvement, as with AIDS patients, many of whom present initially with dermatological complaints. Skin lesions present in limitless variations and in many instances may not easily be identified by even the most experienced dermatologist. But a thorough history and examination should at least help you to place your findings into one of the categories mentioned above, and help you discern a likely etiology.

The skin performs many crucial functions. It acts as a protective barrier, shielding the internal organs of the body from physical trauma, noxious chemicals, microbes and cell-damaging solar radiation. It helps regulate body temperature, fluid balance, and sensory input from the environment, and functions also as part of the immune system.

Skin is comprised of an outer layer called the epidermis and an inner layer, the dermis. The epidermis contains primarily keratin-producing cells which perform the major barrier function of skin. Melanocytes are another cell type found in the epidermis and they produce the pigment melanin which determines skin color. The dermis is made up of a predominantly connective tissue layer with a deeper fat layer. It contains the blood and lymphatic vessels, nerve endings, sweat and sebaceous glands, and hair follicles. Hair and nails are non-living appendages of skin and are composed of the protein keratin.

HISTORY

During the course of a thorough medical history and physical examination you will already have performed much of the dermatologic evaluation. However, when a patient presents with a dermatologic complaint, or when unexplained abnormal skin findings are noted during a general examination, you should proceed with a systematic, focused approach to the problem, as would be done for any other organ system.

History taking may need to be extensive with regard to the course of skin lesions and possible inciting factors when the etiology is unclear. A complete dermatologic history should elicit following information:

I. General medical history
Does the patient have any chronic medical problems or recent illnesses which may suggest a systemic cause of the skin findings?

II. History of allergies

Inquire about known allergic reactions to medications, foods and topical agents (i.e., cosmetics, soaps) as well as about hay fever and asthma.

III. History of medications

It is essential to note both systemic and topical medications, including prescription and over-the-counter products. Some medications are more likely to cause rashes than others, but drug reactions are common and almost any agent may be implicated. How long has the patient been using each medication? If any were recently discontinued, when? Although new medications (taken for day or weeks) are the most likely to cause drug reactions, even those taken continuously for years may cause reactions.

IV. Family history

Are there any family members with a similar skin condition? If so, this may reflect a contagious etiology or a common exposure among household members, or may suggest the possibility of a hereditary condition.

V. Course of skin lesions

Different rashes may follow a characteristic pattern in their appearance over time, a pattern which may be crucial to identifying an etiology.

A. When did the lesions appear?

They may have appeared acutely within the past couple of days or, conversely, may have been present for many years. If the latter, why has the patient sought medical evaluation at this time.

B. How has the lesion or rash changed?

In the case of a persistent single lesion, has its appearance recently changed in any way? For example, recent rapid growth, color change or bleeding should make you suspect malignant transformation, while cancer would be a less likely concern in a lesion unchanged for a few or more years. If a more generalized rash is present, where did it start, and what was the pattern and time course of spread? A rash such as that of measles classically begins on the face and then spreads to the trunk and limbs. Did the lesions look different initially, or were there any noted previously which are not visible now? For instance, vesicles may have been present at first, but resolved by the time of examination.

C. Does the patient have any associated symptoms?

Pruritus (itching) is a complaint characteristically associated with a number of disorders, such as hives and contact dermatitis. Pain is a less frequently reported symptom but may be severe, as with herpes zoster (shingles).
D. Is there a correlation between the onset of skin lesions and any particular event or exposure?

In some cases the patient will already have noted a clear association, i.e., a rash which appeared after the ingestion of a medication. Often, however, you may need to ask several questions to elicit such associations, as patients are unaware of the importance of various factors. For example, if the patient denies taking any medications, you should ask specifically about such over-the-counter agents as aspirin, cold remedies and birth control pills. Patients frequently will not report these items when being questioned more off-handedly. If an allergic contact dermatitis seems likely, the list of possible exposures to consider may be extensive, including cosmetics, detergents, topical medications, and occupational and recreational exposures. In other situations, exposure to sunlight may be an inciting or exacerbating factor (more common in summer months); or a recent flu-like illness, overlooked by the patient, may lead you to suspect a viral exanthem.

E. Has the patient used any systemic or topical agents with subsequent improvement in appearance of skin lesions or symptoms?

Improvement with a particular agent may suggest one diagnosis more than another.

EXAMINATION

A thorough dermatologic examination should include all visible body surfaces. Thus, you should be evaluating not only the skin, hair and nails, but also the mucous membranes (mouth, eyes, nose, genitalia). An entire body examination is usually unnecessary for a readily identified localized process, but many findings may be missed if you do not actively search beyond the most apparent pathology, or that which the patient points out.

The examination is best performed in a room with bright overhead light. You should also have a flashlight at hand; a ruler and magnifying glass are frequently necessary. The patient should disrobe completely except for a gown.

The following outline provides a systematic approach to use each time you perform a skin examination:

I. Note the overall appearance of the patient and skin. Is the patient healthy or ill-appearing? Is there an abnormal color to the skin? (i.e., paleness in anemia, yellow hue in jaundice, blue in cyanosis) Do you see a generalized process involving a large part of the body surface?

II. Inspect each part of the body. Do so in the same order each time, as you would in a general physical examination. A head-to-toe approach is suggested here.

A. Scalp and hair. If the patient has a full head of hair, you may need to part it in several areas to see the scalp well. Hair bands should be removed so that the hair is loose. In evaluating hair, especially note any areas of alopecia (hair loss) or thinning.

B. Face, including eyes, nose, and mouth. In examining the eyes, have the patient look in all directions to reveal conjunctival lesions. In the nose, examine the outer
nostrils and the nasal septum (using a flashlight). Mouth findings are often subtle and you should always use a flashlight here. Have the patient move the tongue to either side so that the inner cheeks can be visualized; also inspect the palate and all surfaces of the tongue.

C. Ears and neck. Inspect the outer ear, the external ear canal and behind the ears. After examining the neck, feel for any enlarged lymph nodes locally, as well as elsewhere.

D. Chest and abdomen. Remember to inspect the axillae and under the breasts, and in skin folds of obese patients.

E. Back and buttocks. Also examine the intergluteal cleft and perianal region.

F. Arms, hands, fingernails. Inspect the sides of the fingers and web spaces, and distinguish lesions on the dorsum of the hand from those on the palms. The presence of palmar, usually along with plantar (sole) lesions is characteristic of certain diseases. When examining nails also look at the surrounding (periungual) area and the cuticles.

G. Legs, feet, toenails. The groin folds should be inspected at this time. Evaluate the feet in the same manner as the hands, including interdigital areas and the soles.

H. Genitalia. Inspect the pubic area and labia in women, and the pubic area, scrotum and penis in men. An uncircumcised male should retract the foreskin.

III. Description

Lesions found in each of the above areas should be characterized carefully. Your observations and descriptions are crucial here. A magnifying glass may be helpful, especially for smaller lesions. You should note all the following characteristics of the lesions upon inspection:

A. Number and distribution. There may be one or more lesions in a localized area, or numerous in several areas. The distribution often suggests an etiology. For example, a systemic process such as a viral illness or drug ingestion would be more likely to cause a generalized eruption than a localized one. An eruption confined to one dermatome (the cutaneous distribution of a single spinal nerve root) is classic for zoster. Lesions on sun exposed areas, such as the face, backs of the hands and upper chest suggest photosensitivity (sun-induced) reaction.

B. Arrangement or configuration. Do the lesions form a pattern which can be described? For instance, an involved area with well-demarcated linear borders often suggest a contact dermatitis. Other configurations may be labeled annular (circular) or serpiginous (wavy). Often, the arrangement is random, forming no particular pattern.

C. Size of individual lesions. If several lesions are present, they may be similar in size, or there may be a range of sizes. If the latter, you should indicate the range (i.e. 5-15 millimeters).

D. Color. The following terms are most commonly used in describing colors of skin:
1. Flesh-colored – no change from surrounding normal skin.
2. Hypopigmented – lighter in color than surrounding skin.
3. Hyperpigmented – darker in color than surrounding skin. Hyperpigmented lesions are usually various shades of brown from the pigment melanin.
4. Erythematous – red. Different lesions may vary from pale to very bright to deep red in color, and this should be indicated in your description.
5. Violaceous – purple.

Skin lesions may also come in many other colors, including white, pink, blue, black, yellow and gray. Noting uniformity (or non-uniformity) of color is important. A lesion may have an erythematous ring around the periphery with a flesh colored center. Another lesion may be a uniform light brown or it may be unevenly colored shades of brown; both could be rightly labeled hyperpigmented, but a more precise description is necessary to distinguish the two.

E. Shape. Individual lesions are most commonly round or oval, but may also be linear or other shapes. Next inspect the borders. Are they well-demarcated or indistinct, even or jagged? Also note the three-dimensional shape. A lesion may be raised above the level of the skin, even with it, or depressed below the surface; or it may be a combination, such as with raised edges and a central ulceration. Some common shapes of raised lesions are dome-shaped, flat-topped and filiform (finger-like). At the skin surface a lesion may also be broad-based or pedunculated (on a stalk).

F. Surface characteristics. Examples are smooth, rough, shiny, dull, waxy and verrucous (warty).

The final step is palpation. Carefully run your index finger over the lesion and note the texture of the surface (i.e. rough or smooth). At times you may only be able to distinguish a slightly raised lesion from a flat one by careful palpation with your eyes closed. Next determine the consistency by pressing on the lesion and then palpating it between your fingers. Terms used to describe consistency include rock-hard, firm, rubbery, fluctuant and soft. Also note how far the lesion extends below the skin surface by feel. If a lesion is completely below the surface, is it fixed in place (thus attached to the epidermis and/or dermis) or freely moveable (thus completely underlying the skin)? Lastly, subtle changes in the feel of the skin surrounding a lesion (i.e. an apparently small malignancy to the eye) may indicate more extensive involvement of the area, and may have important therapeutic implications.

Terminology

I. Primary lesions = lesions which have not been altered by external forces or time

   A. Flat, non-palpable lesions (demarcated only by color change from the surrounding skin; cannot be distinguished by touch)

      1. Macule – smaller than 2 cm. In diameter
      2. Patch – larger than 2 cm.

   B. Solid, palpable lesions
1. **Papule** – smaller than 1 cm., elevated above the skin surface.
2. **Plaque** – larger than 1 cm., flat-topped and elevated above the skin surface.
   Plaques may be very large, covering extensive areas. Smaller plaques may be composed of grouped, confluent papules.
3. **Nodule** – Usually spherical, a nodule may be palpated deeper than a papule or plaque and may be below the skin surface.
4. **Wheal** – A papule or plaque which is formed by edema in the skin, and which typically disappears after a short time.

II. Fluid-filled lesions

1. **Vesicle** – smaller than 1 cm and raised above the skin surface; a vesicle usually contains a clear serous fluid, but may also contain blood. Vesicles are commonly called blisters.
2. **Bulla** – Larger than 1 cm with the same contents as a vesicle.
3. **Cyst** – A firm-walled lesion usually containing a semisolid material. A cyst may be distinguished from a nodule by its softer, more rubbery feel.
4. **Pustule** – Small lesion raised above the skin which contains purulent (opaque) material (pus). Lesions which contain pus and that are larger and extend deeper are called in order of the increasing size, furuncles, carbuncles (made up of multiple furuncles) and abscesses.

III. Depressed lesions

1. **Erosion** – An area of skin loss, usually with a moist, erythematous base. An erosion is fairly superficial and does not extend below the epidermis.
2. **Ulcer** – An area of skin loss extending into the dermis or deeper.
3. **Fissure** – A linear erosion or ulcer.

IV. Secondary lesions – These occur as the result of change in primary lesions over time, or from exogenous manipulation of the skin.

1. **Scale** – White flakes from the top of the epidermal layer (stratum corneum) which are retained on the skin surface.
2. **Crust** (scab or eschar) – A solid, brownish covering over a lesion which is composed of old dried serum, blood or exudate.
3. **Erosion** – As described above. An erosion may be secondary if it results from the rupture of a vesicle or bulla. An excoriation is erosion created by scratching and is usually linear or angular.
4. **Lichenification** – Thickening of the skin with accentuation of skin lines. Lichenification results from repeated rubbing and scratching.

**Common Skin Disorders**

Once lesions have been characterized, the next step is making a diagnosis. The remainder of the chapter includes brief descriptions of some of the most commonly encountered skin disorders, grouped by appearance into general categories. Keep in mind that there are limitless variations in presentations for any given lesion or rash, and that the descriptions here are only the most typical.
I. Skin-colored lesions

A. Verruca (wart) – firm papule, rarely larger than 1 cm with a rough, thickened surface, often with tiny vegetations projecting outward (thus, the term “verrucous”). You may see characteristic pinpoint-sized black dots which are thrombosed capillaries. The most common location is fingers and hands. Genital warts (condylomata) may be few or many in number, and are smooth surfaced. Warts on the soles (plantar wars) are typically flat and covered with callus.

B. Solar keratosis (actinic keratosis) – Usually smaller than 1 cm oval or round macules or papules, with rough surface scale. Solar keratoses may be single or multiple and occur in chronically sun exposed areas (face, lips, bald scalp, back of hands) in fair-skinned people. Actinic keratoses are considered pre-malignant.

C. Keloid – Firm raised mass of scar tissue at the previous site of a wound (i.e. vaccination, incision, pierced ear). Keloids are more common in darker-skinned individuals.

II. Lesions with increased pigmentation (hyperpigmentation)

A. Solar lentigo (liver spot) – Well-demarcated, round or oval macule found in sun exposed areas (face, forearms, backs of hands). Lesions may be multiple and increase in number with aging in lighter skinned individuals.

B. Seborrheic (keratosis) – Raised lesion, usually 0.5 cm. to 2 cm., with a waxy, verrucous surface. Lesions occur with aging, may be multiple and often appear to be “stuck on” to the skin.

C. Nevus (mole) – Usually round macule or papule, usually less than 1.5 cm. with a smooth surface. There may be hair growth within the lesion. Nevi may be congenital or appear up until around age 30; congential nevi can be small or range up to several centimeters in size.

D. Malignant melanoma – A flat or raised lesion commonly characterized by any or all of the following: irregular shape, various shades of color within one lesion, increasing size, bleeding or itching. Melanoma is very rare in darker skinned individuals except on the palms and soles. Be suspicious of a “mole” or other lesion which develops any of the above characteristics!

III. Lesions with decreased pigmentation (hypopigmentation) or absent pigmentation (depigmentation).

A. Vitiligo – Well-demarcated macules or patches of skin, snow-white in color with no surface change; most common on the backs of hands, knees, elbows, axillae, and periorificial areas (i.e., around mouth, eyes, anus). Patches of vitiligo are completely lacking in pigmentation and are most obvious in darker-skinned individuals.

C. Tinea versicolor – Multiple macules or patches with fine scale, almost always located on upper trunk and arms. Tinea versicolor is caused by a superficial
fungal infection and is more commonly seen during the summer months. It may also present as hyperpigmented macules and patches.

IV. Vesicular lesions

A. **Acute contact dermatitis** – Multiple vesicles (or bullae) with prominent erythema in the area of recent contact with an allergen. The area is intensely itchy and there is often weeping of serous fluid along with crusting. Areas with well-demarcated linear edges or individual linear lesions are often suggestive of a contact dermatitis. **Chronic contact dermatitis** usually presents with erythema scaling and pruritis, but not with vesicles.

B. **Herpes simplex** – Small or large group of vesicles on an erythematous base which is often painful. After the vesicular stage, lesions appear as shallow erosions. Herpes, which is caused by a virus, is most common in the oral or genital areas but may occur elsewhere, and may be recurrent in the same location.

C. **Varicella (chicken pox)** – Multiple discrete, small vesicles on an erythematous base (“dew drop on a rose petal”). The rash occurs primarily on the trunk but may involve the head and extremities, and is very pruritic. Early lesions of varicella are erythematous papules, and may be seen at the time along with vesicles.

D. **Herpes zoster (shingles)** – Multiple groups of vesicles on an erythematous base, distributed on one side of the body along the course of a single dermatome (the cutaneous distribution of a single spinal nerve). Zoster occurs most commonly on the trunk, and is often both preceded and accompanied by severe pain. It is caused by reactivation of latent varicella virus, so the patient will have had chicken pox previously. Always consider zoster when you see a vesicular rash on just one side of the body!

E. **Impetigo** – Multiple vesicular or bullous lesions which develop thick, golden-brown, “stuck-on” appearing crusts. Impetigo occurs primarily in children on the head and upper trunks, and is caused by a staphylococcal or streptococcal infection.

IV. Erythematous non–scaling lesions

A. **Cherry angioma** – 0.5 to 3 mm macule or slightly raised papule bright red in color. Cherry angiomas are seen on the trunk and extremities and increase in number with aging. They do not blanch with pressure.

B. **Urticaria (hives)** – Wheals that may occur anywhere, are pruritic, and typically come and go, lasting for less than 24 hours.

C. **Basal cell carcinoma** – Solitary light red or pink papule with a pearly surface, often with small telangiectases. The surface and edges may be irregular, and there may be crusted and/or eroded areas. Basal cell carcinoma occurs most commonly on the face and is rare in darker skinned individuals.
D. **Cellulitis** – Erythematous plaque which is usually indurated (firm), tender and warm. There may also be local edema. Cellulitis occurs most commonly on the legs, and is caused by a bacterial infection of the dermis and subcutaneous tissue.

V. **Erythematous lesions with scale**

A. **Tinea** (superficial fungal infection) – Small to large, well-demarcated patches or with fine scale. Lesions are often annular in shape and may be more scaly and erythematous at the edges, with a clearer central area. The various types of tinea are named for the location in which each presents:

1. Tinea faceii – face
2. Tinea capitis – head
3. Tinea corporis (ringworm) – body
4. Tinea cruris (jock itch) – groin
5. Tinea pedis (athlete’s foot) – feet and between toes.

B. **Psoriasis** – Thick, small to very large plaques, which are pink or red with silvery white scale. Typical locations for psoriasis are elbows, knees and lower back (sacral area). Plaques of psoriasis are often pruritic.

C. **Seborrheic dermatitis** – White or yellowish, greasy scales overlying poorly demarcated, erythematous areas of skin. Seborrheic dermatitis is usually pruritic and found on the scalp, forehead, over the eyebrows, behind the ears and in the nasolabial folds.

D. **Pityriasis rosea** – Multiple oval, erythematous, flat papules with a ring of fine scale around the edge. The rash is distributed primarily on the trunk and typically along skin-fold lines, forming a “Christmas tree” pattern on the back. The generalized rash may be preceded by a single larger lesion called a herald patch.

E. **Atopic dermatitis** – Seen frequently in infants and children, atopic dermatitis consists of erythematous patches and plaques with lichenification, excoriations, scale and crusts in the setting of dry, itchy skin. Areas typically affected include the antecubital and popliteal fossae, the face, and around the neck. Itchiness precedes the prominent rash, which is exacerbated by constant scratching and rubbing. Often there is a personal or family or hay fever or asthma.

VI. **Purple or blue lesions**

A. **Telangiectasia** – Small, red or bluish, dilated superficial blood vessels, appearing as a short crooked line or in a spider formation.

B. **Petechiae** – Usually multiple, 1-2 mm reddish-purple macules. Petechiae result from leakage of blood into the skin and characteristically do not fade when compressed. Large petechiae are called purpura. Petechiae or purpura can signal a serious systemic illness, such as vasculitis or sepsis.
C. **Ecchymosis** (bruise) – Bluish-purple macule or patch, which usually occurs as the result of local trauma. Like petechiae and purpura, an ecchymosis is caused by leakage of blood into the skin; it may turn various colors as it resolves.

VII. **White lesions**

A. **Molluscum contagiosum** – Small 1-3 mm white papules with a central small umbilication (depression). There may be few or several lesions almost anywhere on the body. Molluscum are caused by a virus and are common in children.

B. **Folliculitis** – Multiple individual pustules, each overlying a hair follicle, usually with a surrounding erythematous area. Folliculitis results from a bacterial infection of hair follicles.

VIII. **Acne**

Lesions of acne vary and do not fit neatly into any of the above categories. Acne occurs primarily on the face but is also seen on the upper trunk and may consist of any of the following lesions:

A. **Open comedone (blackhead)** – Small, flesh-colored papule with a central orifice containing a dark plug (compacted keratin).

B. **Closed comedone (whitehead)** – Small, pale-colored papule.

C. **Pustule**

D. **Erythematous papule**

E. **Erythematous nodule (“cysts”)** – These lesions are seen in more severe cases of inflammatory acne.