

Roxburgh's Common Skin Diseases

19th Edition



EDITED BY

Ayşe Serap Karadag
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Preface

When Archibald Cathcart Roxburgh (1886–1954) created *Common Skin Diseases* in 1932,¹ we doubt that he had any idea that the book would now be in its 19th edition. Some later editions were edited by Peter Forbes Borrie (1918–1984),² John D. Kirby, and Ronnie Marks (1935–2020).³ This may well be a record for a dermatology textbook and rivals such textbooks of medicine as those by Cecil⁴ and Harrison.⁵ There have been several dermatology books that have had multiple editions but none approaching two score.

What makes *Common Skin Diseases* such a perennial favorite among students and practitioners may be that it is not encyclopedic and that it is straightforward. It does not intend to be as all-encompassing as the works by Rook⁶ or Bologna;⁷ rather, it follows in the role of the *Manual of Dermatology*,⁸ written during World War II for the medical corps, or the *Handbook of Diseases of the Skin* created by the Suttons.⁹ Although it was once possible for a single physician to create an inclusive textbook, this is no longer feasible nor realistic. This was recognized by Donald M. Pillsbury (1902–1980) at the University of Pennsylvania in Philadelphia, who created the first modern multi-authored dermatology book in 1956.¹⁰

Roxburgh was an exacting author and sometime editor of the *British Journal of Dermatology*, where he seems to have been an equally exacting editor. According to one obituary, he wrote his textbook in the hours before breakfast, and he took all the pictures for his book himself, processing them as well.¹¹ *The Lancet* referred to his text as “a practical vade-mecum for the dermatologist.”¹²

In creating this edition, we have built on the excellence of the previous versions. The contributors, whom we invited from several international centers, were asked to follow a suggested outline for the chapters. The mere complexities of modern medicine—and dermatology is no exception—often does not permit a uniform format nor did we wish to discuss every affliction of the skin. We have included color pictures where appropriate and have limited the additional reading to but ten items.

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1 Glossary of Dermatologic Words and Terms

Lawrence Charles Parish

Each medical specialty has its own vocabulary, and dermatology is no different. Sometimes, the use of words or terms relating to the skin may seem different from those used in other fields. Other times, the Latinate form of the word may appear questionable.

Our purpose in creating this glossary is to make the chapters uniform and to be understandable to the reader being introduced to the field of dermatology. Where appropriate, we have used the American spelling and nomenclature. Synonyms are included, but an exhaustive listing is not provided.

Abscess: a tender, red 2–3 cm lesion that is inflamed with walled-off purulent material

Acantholysis: separation of epidermal cells due to loss of their connections

Acanthosis: diffuse thickening of the epidermis

Acneiform: resembling acne with somewhat pointed lesions that might include comedones, papules, and pustules

Allergic: an altered reaction to which the patient has been previously exposed

Alopecia: hair loss

Annular: ring-shaped, often with central clearing

Atopic: condition that includes asthma, hay fever, and atopic dermatitis

Atopy: strange-like

Auspitz sign: pinpoint bleeding when the scale is removed

Autoimmune: an altered reaction to one's own body

Barbae: relating to the beard

Biopsy: to take a living specimen for microscopic examination, as opposed to an autopsy (dead specimen)

Blaschko's line: the invisible lines of normal embryonic development that are whorls on the chest and flanks, "V" shaped on the back, and wavy appearance on the scalp

Bleb: a flaccid blister, as in a bulla

Blister: small (>0.5-cm) vesicle; larger (<0.5-cm) bulla

Bohn's nodule: a small nodule found in the ear canal or mouth of a newborn.

Bulla: a blister generally over 1.0 cm, as opposed to a small blister or vesicle and a pustule; bullae (plur)

Burow's solution: an astringent comprised of aluminum triacetate. It is usually diluted with water to make a 1:40 solution

Burrow: a superficial epidermal tunnel due to scabies

Café au lait: the color of coffee with milk or cream added

Carbuncle: an abscess with one opening

Casal's necklace: reddish pigmentation on the neck, resembling a collar, and due to pellagra

Cellulitis: redness, edema, and tenderness without a purulent opening

Chadwick's sign: bluish discoloration of the labia, vagina, or cervix that occurs during pregnancy

Chromonychia: abnormal discoloration of a nail except for white

Circinate: a round lesion-like circle

Clubbing: enlargement of the terminal digit of the fingers that creates a rounding down of the nail and may be associated with underlying disease, sometimes pulmonary malignancy

Comedo: occlusion of the pilosebaceous duct; comedones (plural)

Condyloma: a warty lesion found in the genital region

Confluent: lesions that have merged

Congenital: appearing at birth, not necessarily inherited

Crowe's sign: axillary freckling

Cutis marmorata: a red or blue mottled appearance of the skin due to cold exposure

Cyst: an elevated lesion with an epithelial lining

Dactylitis: sausage finger, swelling of an entire finger or toe, as found in psoriasis

Dandruff: scurf, white scale on the scalp

Darier sign: swelling of the skin after scratching the skin

Decubitus: lying down leading to loss of skin and subcutaneous material, that is, decubitus ulcer

Defluvium: flowing or falling off

Dermatitis: inflammation of the skin; dermatitides (plural)

- Dermatographism:** a red elevation of the skin due to scratching the skin
- Desquamation:** peeling of the skin, often in sheets, as occurs following a sunburn
- Diascopy:** a test that shows the vascular or non-vascular characteristics of a lesion when pressure is applied
- Discoid:** a round or nummular lesion
- Eczema:** inflammation of the skin; dermatitis is the preferred American term
- Eczematoid:** resembling eczema, that is, dermatitic-like
- Ecchymosis:** black and blue, due to bleeding under the epidermis
- Eclabium:** a deformity of the lips with the outward turning
- Ectropion:** an abnormal outward turning of either the upper or lower eyelid
- Edema:** swelling of tissue due to abnormal amounts of fluid
- Emperipolesis:** inclusion of a cell within the cytoplasm of another cell
- Ephelids:** freckles
- Epithelioma:** an older term used for describing basal cell carcinoma or squamous cell carcinoma
- Eponym:** use of a proper name to describe a disease
- Epstein's sign:** small elevated lesions in a newborn's mouth
- Eruption:** a rapidly appearing lesion
- Erosion:** wearing away of the surface
- Erythroderma:** redness and subsequent shedding of scales, affecting most of the body's surface area
- Erythronychia:** reddish discoloration of the nail
- Excoriation:** picking or scratching to eliminate a lesion or an imaginary lesion
- Exudate:** fluid that has leaked from blood vessels into the surrounding tissue; when due to an infectious process, it is considered a purulent process or pus
- Exfoliation:** peeling off the skin
- Factitial:** artificial, self-created lesion
- Familial:** occurring within family members; not necessarily due to heredity
- Flaccid:** soft, no longer firm
- Folliculitis:** inflammation of the hair follicle
- Freckle:** a small brown lesion, that is, ephelids
- Furuncle:** an abscess with several openings
- Fusiform:** spindle-shaped
- Futcher's line:** also known as Voight's line; a normal demarcation between a darker and lighter area
- Genodermatosis:** disease with abnormal skin findings due to heredity
- Goodell's sign:** softening of the cervix, occurring after four weeks of gestation
- Goosebump:** horripilation, piloerection of the hair follicles due to emotions, temperature change, or fright, frequently observed on the forearms
- Granuloma:** packed collection of inflammatory cells
- Granulomatous:** resembling a granuloma
- Gulliver's sign:** an indication in a patient with pyoderma gangrenosum that the inflammation is being controlled.
- Gyrate:** round or circular
- Hematoxylin and eosin stain:** abbreviated as H&E, where hematoxylin stains the nuclei purplish-blue and eosin stains the cytoplasm pinkish
- Hereditary:** inherited, as opposed to acquired
- Herpetic:** a group of lesions with central pustules, resembling the lesions of *Herpes simplex* or *Herpes zoster* infection
- Hive:** a reddish elevated lesion, that is, urticaria
- Horripilation:** see *goosebump*
- Hutchinson's sign:** vesicular eruption on the nose preceding eye involvement due to viral infection of the trigeminal nerve
- Ichthyosiform:** resembling ichthyosis or fish scale-like
- Impetiginized:** resembling impetigo with oozing, crusting, and scaling
- Id reaction:** development or stimulation of acute dermatitis or lesions in a distant location from the initial site, usually on the hands induced by most often due to a superficial fungal infection on the feet
- Immunofluorescence:** using fluorescence to stain the antibody. Direct immunofluorescence stains the antibody. Indirect immunofluorescence permits the antigen to react with the antibody, after which the non-antibody globulin is washed away, and the tissue is bathed with fluorescein-labeled anti-rabbit globulin
- Impetiginization:** superficial bacterial infection superimposed upon an underlying dermatitis

Isomorphic response: creation of additional lesions of the same characteristics as the original lesion, that is, Koebner phenomenon

Itch: an irritable feeling that can be associated with hives or many other skin conditions causing one to scratch

Jacquemier's sign: purplish discoloration of the vagina occurring early in the pregnancy

Kamino bodies: dull pinkish bodies found at the tip of the dermal papillae

Keratinization: creating additional skin or scale

Keratolysis: separation of sheets of epidermal cells

Keratosis: excessive horny material

Koebner phenomenon: see *isomorphic response*

Koilonychia: spoon-shaped nails

Lamellar: sheets of cells

Lentigo: a small brown lesion

Lesion: a characteristic change in the structure of the skin

Leukonychia: white streaks or dots in the nail

Lichenified: thickening of the skin, as in lichens

Linea: formation of a line

Lisch nodule: an elevated tannish nodule on the iris

Livedo: bluish color due to venous congestion

Lunula: the whitish half-moon area often seen at the base of the nail

Lupus: wolflike appearance

Maceration: softening of the skin leading erythema, oozing, and scaling

Macrophage: a cell that surround bacteria or other organisms. It can provide antigens to T cells that release cytokines that can start an inflammatory process

Macular: resembling a macule

Macule: a lesion that is flat with color change

Melanotic: a dark, blackened appearance

Melanonychia: brown or black streaks or dots in the nail

Microbiome: the bacteria, viruses, or fungi found in areas of the body

Morbilloform: red lesions resembling measles

Mottled: irregular discoloration

Multiforme: many different shapes

Nikolsky's sign: slight rubbing of the skin leading to peeling of the superficial layers

Nodule: a larger elevated lesion

Nummular: coin-shaped

Onychodystrophy: defective nail formation

Onychomadesis: shedding of the nail

Onychorrhexis: longitudinal ridging of then ail

Ophiasis: hair loss at the edges of the scalp

Palmar: pertaining to the ventral surface of the hand

Papular: resembling a papule

Papule: a smaller elevated firm lesion, varying in area up to 1 cm

Paraneoplastic: signs and symptoms occurring elsewhere in the body due to chemical signaling from a malignancy

Paronychia: inflammation of the nail fold that leads to a painful, sometimes, pruritic area

Patch: a large macule

Pathergy: an exaggerated response to an injury that exacerbates the underlying condition and may create new lesions

Pautrier microabscess: an accumulation in the epidermis of at least four atypical lymphocytes as found in mycosis fungoides

Peau d'orange: resembling the peel of an orange

Pityriasis: a scaly condition

Plantar: pertaining to the sole

Plaque: a small thickened area

Polymorphic: many different shaped lesions

Prurigo: an older term for an itching condition

Pruritic: an itchy condition

Pruritus: itching

Purpuric: extravasated red blood cells giving a purplish color

- Pustule:** a lesion containing white to yellow, somewhat viscous fluid
- Rash:** a term that should be avoided when possible, eruption
- Reticulated:** resembling a net
- Retiform:** netlike
- Russell's sign:** callouses on the dorsal aspect of the hand, associated with self-induced vomiting
- Scale:** exfoliated skin
- Scaling:** a lesion containing scale
- Seborrheic:** a term whose original meaning had to do with the sebaceous gland
- Serous:** a watery yellowish fluid
- Serpiginous:** having a wavy appearance, like a snake moving
- Sisapho:** ophiasis spelled backward to reflect a reversed hair pattern loss with the hair remaining at the edges of the scalp
- Sign:** a clinical manifestation that can be seen or elicited on examination
- Syndrome:** a group of signs and/or symptoms to describe a condition
- Symptom:** an abnormal feeling experienced by the patient that cannot be seen
- Stria:** a superficial atrophic line
- Targetoid:** resembling a target shape
- Test results:** a positive test result, such as pathogenic growth on a bacterial culture, confirms the diagnosis, whereas a reactive serologic test result only suggests the diagnosis
- Tinea:** a scaling fungal eruption
- Trachyonychia:** longitudinal ridging with brittle grayish nails, split ends, and a rough surface
- Transudate:** an edematous process due to increased pressure on blood vessels causing fluid to accumulate in the surrounding tissue leading to swelling of the tissue
- Trichodystrophy:** defective hair growth often leading to alopecia
- Trichomalacia:** distorted hair shafts due to repeated twisting, occurring in trichodystrophy
- Tumor:** abnormal skin growth, often connoting a skin cancer
- Tzanck smear:** a smear taken from moist tissue that is stained with Giemsa or toluidine blue that will show nucleic bodies; that is, in *Herpes simplex* or *Herpes zoster* infection with multinucleated giant cells that have ballooned
- Ulcer:** a defect that descends from the skin surface
- Ulcerated:** the result of an ulcer, a depression from the surface
- Ungual:** related to the nail
- Verrucous:** wartlike
- Vesicle:** a small blister
- Voight's line:** see *Futcher's line*
- Xerophthalmia:** decrease in tears
- Xerotic:** resembling dry skin
- Xerostomia:** decrease in saliva
- Wart:** a verruca
- Wheal:** a red elevated lesion, that is, hive
- Welt:** a red elevated lesion, that is, hive
- Wood light:** a diagnostic tool that uses long-wave ultraviolet light appearing as a black light to diagnose skin infections and disorders
- Woronoff ring:** a round, blanched area surrounding a psoriatic lesion in the shape of a girdle, resembling the lesions of *Herpes zoster* infection

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2 Diagnosing Skin Disease

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DIAGNOSING SKIN DISEASE

Skin diseases represent a vast and heterogeneous body of disorders that can vary greatly in their clinical presentations, manifesting signs, and associated symptoms. Adopting a systematic and methodic approach is essential to the effective and accurate diagnosis of skin disease. This systematic approach, when combined with the responsible utilization of appropriate diagnostic aids, can serve to secure the diagnosis in a wide variety of dermatologic conditions.

SIGNS AND SYMPTOMS

Signs

Many of the characteristics that define skin diseases are fundamentally visual in nature given the externality of the skin. The distribution, color, and morphology of skin lesions are all integral components of the description of dermatologic conditions and serve as a foundational component of the diagnostic process.

Color

The color of the skin is determined by the interaction of a variety of internal and exogenous factors, including the production of melanin pigment by resident melanocytes, the functional activity of skin vasculature, and many external forces, such as ultraviolet radiation and manipulation of the skin. Color changes related to these factors often manifest as hyperpigmentation, hypopigmentation, or erythema. Discoloration can be a source of significant distress for patients, especially when widespread or highly visible areas, such as the face, are involved. This is particularly true in dark-skinned patients, in whom the contrast between normal and affected skin may be dramatic, such as the depigmentation of vitiligo and hyperpigmentation of resolved lichen planus.

The pigmentation of the skin is primarily determined by the function of skin melanocytes in the production and distribution of melanin pigment. This process is responsible for the determination of skin type in normal skin, but it is also implicated in the pigmentary changes associated with many dermatologic conditions. Inflammation, ultraviolet radiation, and cryotherapy all can cause significant changes to skin color (Figure 2.1). Melanocytes are highly sensitive to cold temperatures, and cryotherapy may lead to post-treatment hypopigmentation, particularly in patients with darker skin. Inversely, exposure to ultraviolet radiation activates melanocytes to produce and



Figure 2.1 Hypopigmented and subtle erythematous plaques of sarcoidosis in a dark skin patient.



Figure 2.2 Non-scaly erythematous papules of early lesions of psoriasis.

distribute melanin granules more effectively, which can lead to skin tanning as part of an evolutionarily honed response.

A variety of other pigments can less commonly contribute to changes in skin color at a localized or generalized level. Systemic disorders in metabolic or endocrine function can cause generalized changes in skin pigmentation. For example, the buildup of homogentisic acid in connective tissue and cartilage in alkaptonuria leads to skin darkening, especially on the ears where cartilage is closely opposed to the skin. Prolonged systemic therapy, such as hydroxychloroquine, may result in widespread slate-gray discoloration.

Erythema is a visual manifestation of most inflammatory skin diseases, which is determined by the number, caliber, flow rate, oxygenation status, and body site of the skin's blood vessels. Other factors that determine the specific hue and shade include the density of the inflammatory infiltrate and epidermal changes. In turn, the specific characteristics of erythema, such as shade of color and border definition, can provide significant clinical insight into the disease process unfolding within the skin (Figure 2.2). A plaque of psoriasis, for example, has a characteristic, bright red hue that is well circumscribed (Figure 2.3), while a plaque of pityriasis rubra pilaris has a characteristic erythema with an orange hue that is less well-circumscribed. Additionally, the extravasation of red blood cells from the vasculature can lead to striking changes in skin color, referred to as purpura. This presence of palpable purpura is associated with a variety of vasculitides and vasculopathies. In darker skin individuals, erythema may be subtle, harder to detect than in fair skin individuals, and often have a duskier hue (Figures 2.4 and 2.5).

Texture

The texture of healthy skin should mostly be smooth and soft. When the normal function and life cycle of skin cells are disturbed, their texture can become profoundly altered. Coarseness, excessive scale, and dryness can each indicate a disruption of normal functioning and serve to indicate the presence of an underlying pathologic process.

The replacement rate of the cornified cells in the stratum corneum, the outermost layer of the epidermis, is approximately 2 weeks with some variation by body site and age. This turnover normally occurs incrementally through the shedding of individual cornified cells throughout the



Figure 2.3 Scaly large erythematous plaque of psoriasis.



Figure 2.4 Flat-topped hyperpigmented papules with the violaceous border of lichen planus.



Figure 2.5 Hyperpigmented plaque surrounded by a cluster of vesicles due to allergic contact dermatitis from using an antibiotic ointment.

course of daily life. This process is largely imperceptible in healthy skin, but it can become apparent when the process of normal keratinization is disrupted. Should this occur, a significant scale can form on the surface of the skin, which results in visual and textural changes. This disruption of skin function can be the result of a variety of underlying conditions that can range from genetic abnormalities, such as ichthyosis, to inflammatory changes, such as psoriasis, to the exogenous influence of factors, such as medication application and repetitive friction.

Morphology: Primary and Secondary Skin Lesions

An appreciation of the essential attributes of color, size, shape, and thickness is vital to the process of describing and understanding skin lesions and, in turn, underlies the accurate diagnosis of dermatologic conditions. Traditionally, skin lesions have been divided into primary and secondary lesions, where a primary skin lesion represents the initial or primary appearance before any treatment, manipulation, or changes due to the natural history of the disease process. A secondary lesion represents the appearance after the evolution of the skin disease process, treatment, or manipulation of the primary lesion.



Figure 2.6 Tense vesicles and bullae of bullous pemphigoid.

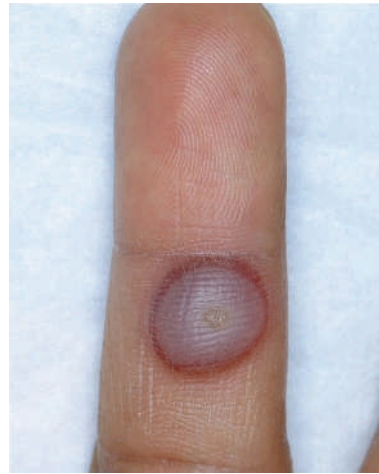


Figure 2.7 Tense hemorrhagic vesicle from cryotherapy of a wart.

Primary lesions have been categorized predominantly based on size and palpability. Although different size references have been applied, a 10-mm size threshold rather than 5 mm has been consistently applied. For example, macules, papules, and vesicles are 10 mm or less in diameter.

- *Macule/patch*: Flat, usually nonpalpable skin lesion
- *Papule/plaque*: Mesa or table-like elevated skin lesion
- *Vesicle/bulla*: Blisters that can be intraepidermal, subepidermal, or both

Some contour descriptors of a papule and plaque—flat-topped, dome-shaped, acuminate, papillated, digitated, and umbilicated—are strongly associated with specific skin conditions, such as the flat-topped papules of lichen planus (Figure 2.4), acuminate vesicles of dyshidrotic dermatitis, and the umbilicated papules of molluscum contagiosum. In addition, nodule (1–2 cm) and tumor (>2 cm) have been referred to as primary lesions that are larger and more elevated than plaques.

A variety of causes are associated with blistering dermatosis, including autoimmune, infectious, and inflammatory etiologies. Autoantibodies against desmogleins 1 and 3, which are components of desmosomes that keep keratinocytes attached to one another, resulting in acantholysis, or a loss in intercellular connections, and can lead to intraepidermal blisters. In contrast, autoantibodies against components of hemidesmosomes of the dermo-epidermal junction in bullous pemphigoid result in subepidermal blisters (Figure 2.6). Herpesvirus infection of the epidermis may result in acantholysis and varying degrees of epidermal necrosis, which can lead to intraepidermal or subepidermal blisters. Significant intercellular edema in allergic contact or nummular dermatitis results in intraepidermal blisters. Any process that weakens the dermo-epidermal junction may result in a subepidermal blister (Figure 2.7). Severe dermal edema from a variety of sources may also result in a subepidermal blister (e.g., lymphedema blister, bullous insect bite, and bullous Sweet syndrome). Depending on the severity and acuity, most interface dermatitides, which are associated with a variable degree of necrosis of keratinocytes at the dermo-epidermal junction, have a subepidermal bullous expression. Examples include bullous erythema multiforme, bullous lichen planus, and bullous fixed-drug eruption.

The location of these blisters within the epidermis determines their behavior and longevity. Intraepidermal blisters tend to be flaccid and evolve into erosions in a short amount of time, while subepidermal blisters tend to be tense and generally last longer before rupturing (Figure 2.6). Whether a blister is tense or flaccid, however, will ultimately depend on the size and speed at which it forms.

Secondary skin lesions include impetiginization, pigmentary changes, scale-crust that can be purulent and/or hemorrhagic, lichenification, fissures, erosion, ulceration, and scar formation. A patient with atopic dermatitis may manifest a variety of secondary skin lesions, all of which are due to manipulation of the skin, including rubbing, scratching, and picking by the patient due to persistent pruritus. The presence of secondary changes offers insight into the symptomatology



Figure 2.8 Scaly annular patch of tinea corporis.



Figure 2.9 Annular non-scaly plaques of granuloma annulare.

of the patient's disease and provides useful information on the clinical course and characteristics of the condition. Inversely, they may also obscure the primary findings that would help identify the underlying skin disease; therefore, an awareness of the presence of secondary skin changes is important to adjusting clinical expectations during the assessment of primary lesions.

Dermatologic disorders can manifest in any variety of shapes, from the linear configuration associated with allergic contact dermatitis to polygonal papules with lichen planus (Figure 2.4) to scaly and non-scaly annular plaques associated with tinea corporis (Figure 2.8) and granuloma annulare (Figure 2.9). The demarcation of shape can be well-defined, such as psoriasis (Figure 2.3) and vitiligo, or it can be ill defined and blend into the surrounding normal skin, such as nummular dermatitis. Additionally, it is important to be aware that shape is not only limited to external skin changes but also includes depth of involvement, particularly in malignant skin conditions. This includes melanoma, where the depth of extension has profound prognostic implications, and basal cell carcinoma, where the insidious process of infiltration can cause significant distortion of surrounding tissue over time.

Distribution

The distribution of skin findings in dermatologic disorders is an important diagnostic tool. Diseases of the skin can present in a generalized manner or be localized to one or several specific body sites. Although the varicella-zoster virus causes the appearance of vesicles in both chickenpox disease and shingles, these two clinical entities vary considerably, as the former is characterized by a generalized eruption, and the latter is typically limited to the localized dermatome. Skin cancer is most commonly found on chronically sun-exposed sites, while necrobiosis lipoidica is almost always localized to the shin. Additional examples include erythema multiforme characteristically involving the palms and bilateral extremities (Figure 2.10), dermatitis herpetiformis involving bilateral elbows, knees, buttocks, and scalp, and warfarin-induced skin necrosis usually involving fatty areas, such as the abdomen and thigh. When encountering a hospitalized patient with a suspicion of drug reaction, the presence of mucosal involvement can be a clinically significant indicator of life-threatening diseases, such as Stevens-Johnson syndrome or toxic epidermal necrolysis requiring a higher acuity of care. In sum, careful assessment of the overall distribution of skin lesions should be performed routinely since it can provide important diagnostic information.

SYMPTOMS

Dermatologic conditions are often associated with a variety of subjective symptoms, including pruritus, pain, and discomfort. Awareness of the presence of these symptoms is an important component of clinical care, because these symptoms play a significant role in influencing the patient's quality of life and well-being.



Figure 2.10 Targetoid macules and patches of erythema multiforme.

Pruritus

Pruritus, or itch, is a common symptom found in a wide variety of dermatologic disorders, including atopic dermatitis, urticaria, allergic contact dermatitis, nummular dermatitis, scabies, and dermatitis herpetiformis.

Pruritus is fundamentally characterized as an uncomfortable sensation linked to a desire to scratch. The degree of pruritus associated with these dermatologic conditions and other systemic disorders can vary from mild to debilitating. The presence of pruritus can be associated with significant skin changes, or it can be found in seemingly normal skin. Pruritus can be exacerbated by many different factors, including low humidity, frequent bathing, aging skin, and irritating substances. These factors can aggravate underlying skin disease, since they can incite pruritus, particularly in the diseases listed earlier.

Pruritus can also lead to the development of new skin lesions through the traumatic effect of scratching. For example, atopic dermatitis has been colloquially referred to as the “itch that rashes.” Sites of repetitive scratching can also become infected, which can further exacerbate the disease. In some cases, new lesions of the underlying dermatologic disease can occur focally at the site of scratching, which is known as the Koebner phenomenon.

In addition to recognizing the impact that pruritus has on the quality of life and well-being of patients, a focused evaluation of the chronicity and behavior of pruritus symptoms can be a helpful diagnostic clue in the workup of dermatologic conditions. As an example, the pruritus in urticaria is typically transient and migratory, while it can be more chronic and exacerbated by drier seasons in atopic dermatitis.

Pain

The presence or absence of pain can be an important differentiating factor in the diagnosis of dermatologic disorders. Pyoderma gangrenosum and calciphylaxis are both classically characterized as being extremely painful. Additionally, the subjective symptom of pain is often associated with the presence of acute inflammation as seen in cellulitis, panniculitis, infected cysts, and even seborrheic keratoses when they become irritated. In the case of skin malignancies, the presence of pain may indicate perineural invasion.

Importantly, pain can be a significant detractor in the quality of life of patients with chronic dermatologic conditions. In severe atopic dermatitis and other diseases, fissuring of the skin can lead to significant pain and discomfort. In patients with irritant contact dermatitis from workplace exposure, pain can sometimes necessitate alterations in their workplace or work habits; therefore, pain represents a significant source of morbidity for patients with painful dermatologic diseases.

Disability

Dermatologic disorders can carry a profound degree of disability and morbidity into the lives of patients in a variety of ways. Many skin disorders are associated with significant cosmetic

concerns that can interfere with physical and mental well-being. There is a nearly universal human aversion to diseased skin, and it is challenging to prevent and overcome these feelings. One theory proposes that this aversion is rooted in the infectious nature of some dermatologic conditions and, therefore, serves as an evolutionarily protective mechanism. In the modern era, these prejudices are maladaptive and can interfere with interpersonal relationships and even employment. As examples, acne can be a significant stressor in the lives of adolescents and adults, and the nail and scalp changes seen in psoriasis can be embarrassing for patients who work in occupations requiring social contact. An appreciation of the impact that dermatologic disorders can have on the physical and mental well-being of patients is an integral component of providing patient-centered care.

The location of dermatologic disease can also be an important determinant of the degree of disability that it causes. Although the severity of most dermatologic conditions is correlated with the body surface area of involvement, even small and localized lesions on the palms and soles can be debilitating given their functional importance. For example, patients with dactylitis in psoriasis and psoriatic arthritis may be unable to work with their hands as effectively, if at all. Plantar warts and clavus can likewise cause discomfort during ambulation, which can limit mobility. Diseases, such as atopic dermatitis, can also cause fissuring around joints, which can result in discomfort with movement and subsequent immobilization.

Additionally, lesions affecting the face and other exposed areas of the skin can significantly impact self-esteem and self-confidence in patients who interact with others daily. The treatment of choice for various skin conditions may also vary based on the site of involvement. High-potency steroids are often prescribed for plaques on the body but seldom for the face and other areas of thin skin. Therefore, an appreciation of the distribution of lesions on a patient's skin is an important factor in understanding the patient's experience with their disease and in providing effective and appropriate clinical care.

Importantly, the impact of dermatologic conditions on health and well-being on a global and societal scale cannot be understated. Dermatologic conditions represent the fourth-leading cause of disability worldwide among nonfatal conditions. In the United States, one in four people are impacted by skin disease, and the estimated annual cost for medical care alone approaches \$100 billion each year. The global health burden of some dermatologic disorders, such as psoriasis, has continued to rise over recent decades, which indicates a greater need for public and global health efforts to address dermatologic disease.

Common aids: The foundation of diagnosis in dermatologic disease is the clinical history and physical examination. An appreciation of the patient's demographic factors, history of present illness, and general medical status are all important components in understanding the patient's disease process. The presence or absence of associated systemic symptoms is an important data point that may indicate an urgent need for more acute and comprehensive care. Additionally, an informed and focused physical examination that accurately defines and describes the lesions of concern is a uniquely powerful diagnostic tool in the practice of dermatology; however, dermatologic diseases can manifest in a variety of ways, and even a single condition can have multiple different presentations that may overlap with other clinical entities. An armamentarium of diagnostic aids and tools has been developed to assist in the often-challenging endeavor of identifying skin lesions when history and physical examination alone are unable to definitively do so.

Lighting

The availability of bright and consistent environmental lighting is essential in evaluating skin disorders. Sunlight from examination room windows as a source of lighting should be avoided because it provides a highly variable lighting that depends on the time of day, weather conditions, and room orientation. Bright overhead ambient lighting provides more consistent and standardized illumination for skin examinations, while the additional implementation of sidelights can assist with minimizing light distortion and shadow.

More complicated light-based tools are also readily available in many clinical settings. The Wood's lamp is one such valuable tool that has found use in a variety of dermatologic conditions, such as vitiligo and bacterial and fungal infections. A Wood's lamp, which emits wavelengths in the 320–450-nm range, can assist in differentiating pigmentary changes, highlighting fungal and bacterial infections, such as tinea versicolor and erythrasma, and identifying systemic diseases, such as porphyria.

BEDSIDE DIAGNOSTIC TESTS

Diascopy

Diascopy is a useful technique that assesses the blanchability of a skin lesion through the application and pressing of a glass slide over the lesion. This simple test allows for the differentiation of erythema into vascular etiologies related to blood vessel dilation, which are blanchable, and hemorrhagic etiologies, which do not exhibit blanching. Diascopy can also be used in other clinical contexts, such as the identification of lupus vulgaris involving the skin, which exhibits an apple jelly color on testing.

Magnification

Although the naked eye can collect a significant amount of information regarding the morphology of a skin lesion, magnification tools can yield meaningful additional information. A simple magnifying glass can highlight features not readily seen on gross examination, such as small telangiectasias in a lesion suspicious for basal cell carcinoma.

Evaluation of skin scrapings prepped with potassium hydroxide under simple light microscopy is the classic diagnostic test utilized in the diagnosis of dermatophytosis. Using a blue stain, such as toluidine blue, microscopic evaluation of vesicle scrapings—referred to as the Tzanck smear—can be performed to diagnose herpesvirus infection. A mineral oil prep involves the examination of skin scrapings of burrow under light microscopy to identify the presence of scabies mites.

Skin Testing

The unique accessibility of the skin allows for the utilization of a variety of tests that can be readily carried out in the clinical setting. Manipulation of the skin by a clinician is one such test that can yield useful diagnostic information. In the case of Darier's sign, vigorous rubbing of the patient's skin can support the diagnosis of mastocytosis when it results in significant swelling, itch, and erythema. The presence of Auspitz's sign, which is the appearance of punctate bleeding after the scraping of scaly lesions, can be indicative of psoriasis. Additionally, the shearing of skin with rubbing, known as the Nikolsky sign, can be a clinically useful diagnostic finding in the evaluation of blistering skin disorders, such as pemphigus and toxic epidermal necrolysis.

More complex forms of skin testing are also available and can serve to either support or refute a variety of diagnoses. In the case of allergic contact dermatitis, the application of potential causative agents to the surface of the skin through a patch test can yield a hypersensitivity reaction that supports the suspicion of hypersensitivity to a certain substance. The clinical application of this test allows for it to be carried out in a more supervised and controlled setting with lower concentrations of the suspected allergen than otherwise possible.

A similar principle is applied in prick testing for anaphylactic reactions, which involves piercing the skin with a needle laden with a low concentration of the suspected allergen in a controlled and closely monitored setting with anaphylaxis treatment readily available. Additionally, the application of various biochemically active substances to the skin can help in identifying a variety of skin lesions; for example, acetic acid is commonly applied to suspected warts on genital areas and can result in significant whitening that serves to highlight the lesion of concern.

Dermatoscopy

With the advent of portable handheld dermatoscopes, the practice of dermatoscopy has become ubiquitous in dermatology. The technique involves rendering the cornified layer translucent either by using polarized light or immersion contact with the skin, thereby exposing subsurface structures that can be better visualized (Figure 2.11). The most widely utilized dermatoscope consists of polarized light capable of 10× magnification. Special attachments and adaptors for cameras and smartphones allow easy capture and sharing of dermatoscopic images.

Dermatoscopic diagnostic criteria have been developed for a variety of skin diseases, which include inflammatory, neoplastic, and infectious diseases. Its utility has been promoted for evaluating pigmented lesions, especially in the early detection of melanomas and their simulators, such as melanocytic nevi, seborrheic keratoses, dermatofibromas, and solar lentigines. In melanocytic lesions, assessment of subsurface structures, such as typical and atypical pigment networks, dots, and globules, allows for differentiating a nevus from a melanoma. Additionally, a variety of nonmalignant pigmented skin lesions exhibit characteristic appearances under dermatoscopy. A seborrheic keratosis, which can occasionally be difficult to distinguish from melanoma, often exhibits characteristic comedo-like openings on dermatoscopic evaluation. In vascular lesions, dermatoscopy allows for a greater definition of the specific vascular structures (e.g., lagoons) and

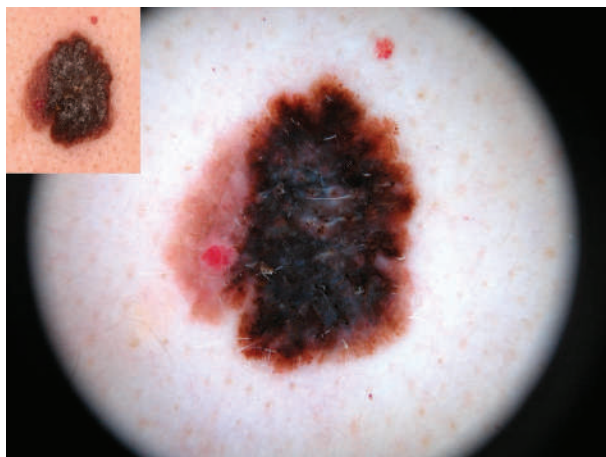


Figure 2.11 Dermatoscopy of melanoma showing multicomponent pattern: blue-gray veil, dark blotch, and asymmetric peripheral distribution of globules.

morphology present within the lesion. Since significant time and effort are needed to become proficient in dermatoscopy, early and strategic immersion in mastering this technique is recommended. Sources of learning material include books, internet sites, and courses.

Medicine is entering the era of artificial intelligence-augmented practice, and dermatology is expected to fully embrace this transformative technology. This is particularly true within the domain of skin cancer detection, where the application of artificial intelligence and machine learning has been increasingly developed. As dermatoscopes and other forms of visualization assist dermatologists in diagnosing skin conditions, advanced machine learning algorithms can process digital macroscopic or dermatoscopic images to identify patterns that differentiate lesions. The deployment of these technologies as diagnostic aids and supplementary tools has been shown to increase the diagnostic accuracy of dermatologists in the differentiation of skin cancers. The era of artificial intelligence-augmented practice is expected to provide more efficient and accessible care of skin diseases.

Laboratory studies: Although the externality of skin allows for the unique ability of clinicians to evaluate conditions through visual inspection and physical manipulation, there are a variety of contexts in which laboratory studies are indicated in the evaluation, diagnosis, and management of skin diseases. Laboratory studies can assist in the initial workup of dermatologic conditions, especially in cases where there is systemic involvement or potential involvement of internal organs. They may be helpful in the initial evaluation of symptoms, such as generalized pruritus when there are no readily apparent dermatologic causes. Laboratory studies are often indicated to monitor adverse reactions of high-risk systemic medications, such as isotretinoin and methotrexate, requiring baseline and serial laboratory studies to monitor the functional status of the liver, kidneys, and other organs.

A variety of laboratory tests are available for dermatologists to establish or confirm a specific diagnosis. In women with hirsutism, hormone levels can be obtained to confirm hyperandrogenism. Venereal disease research laboratory or rapid plasma reagin tests may be obtained in patients suspected of syphilis. Antinuclear antibody testing and tissue antibodies are often reported through titers and can support the diagnosis of diseases, such as systemic lupus erythematosus and a variety of vasculitides. The clinical interpretation of these tests can often be challenging when patients present in an atypical manner or results are borderline. Enzyme-linked immunosorbent assay tests are available to aid in the diagnosis of several autoimmune blistering diseases, such as pemphigus, pemphigoid, and dermatitis herpetiformis. In the case of pemphigus, the detection and level of anti-desmoglein antibodies can contribute to confirming a diagnosis and monitoring the disease course.

There are many examples of dermatologic diseases in which comorbid or associated diseases may need to be excluded via laboratory studies. A patient with alopecia areata may require a check of thyroid disease status, while a patient with oral lichen planus may require checking of viral hepatitis status. A diagnosis of Sweet syndrome requires the exclusion of some time-associated leukemias.

Dermatopathology: The function of dermatopathology—that is, the microscopic examination, description, and interpretation of skin biopsies—is essential to the practice of dermatology.

Through the use of microscopy in conjunction with a variety of histochemical and immunochemical stains, dermatopathology can offer significant insight into the underlying pathology for a wide variety of dermatologic conditions.

Biopsy of the skin is a necessary initial step in the process of dermatopathology evaluation. The selection of the biopsy site is an important decision that can have a profound impact on the utility and sensitivity of histologic evaluation. Depending on the suspected disease process, factors influencing the selection of an ideal biopsy site include lesion age, stage of development, and morphology.

Skin biopsy techniques include shave, punch, incision, and excision. In shave biopsies, a thin superficial portion of the skin is shaved off with a blade, whereas punch biopsies involve the use of a cylindrical cutting device that is rotated down to the level of the subcutaneous tissue before the base of the tissue is cut with scissors to release the specimen. Although a shave biopsy or removal is better suited for superficial epidermal skin lesions, such as superficial basal cell carcinomas, a punch biopsy allows for a more complete microscopic evaluation of the various layers of the skin, which is better suited for inflammatory dermatoses. Finally, an excisional biopsy typically involves the creation of an elliptical excision around the lesion of concern and can result in the greatest quantity of tissue removed for evaluation, which is particularly suited for suspected melanomas. A less optimal incisional biopsy may be warranted when lesions are too large for an excisional biopsy. The most appropriate method of biopsy is directly related to the clinical entity under investigation.

Since errors in the procurement of a skin biopsy specimen are not uncommon, steps to minimize the common errors should be implemented. This should include verification of patient name and site, especially when multiple sites are involved. An appropriate volume of fixative is matched for the size of the sample, for which the ratio of fixative to the specimen should be 15–20:1. The most common stain used in pathology and dermatopathology is the hematoxylin and eosin stain, also known as the H&E stain. This stain highlights the nuclei, cytoplasm, and extracellular matrix, which allows for visualization of individual cells forming the various components of the skin, including their nuclei.

Ancillary stains are often utilized when H&E-stained slides do not provide sufficient diagnostic information. In modern dermatopathology, the development of immunohistochemical stains has allowed for precise evaluation of specific epitopes within the skin. Immunohistochemical stains that target specific protein epitopes are available, which include those used to detect syphilis spirochetes and human herpesvirus 8 associated with Kaposi sarcoma.

For neoplasms that may be benign or malignant, a skin biopsy can often help provide a specific diagnosis, such as seborrheic keratosis, basal cell carcinoma, and melanoma. For inflammatory dermatoses, a biopsy can often demonstrate a histopathologic pattern that is associated with more than one disease, thus requiring clinical pathologic correlation. A spongiotic dermatitis, for example, is associated with nummular or allergic contact dermatitis, so the clinician should correlate this with the clinical findings to arrive at a specific diagnosis. A histologic description of the subepidermal blister with numerous neutrophils, which pattern observed in dermatitis herpetiformis, linear IgA dermatosis, and bullous lupus erythematosus, narrows the differential diagnosis and guides the clinician to pursue specific additional testing (Figure 2.12). In other instances,

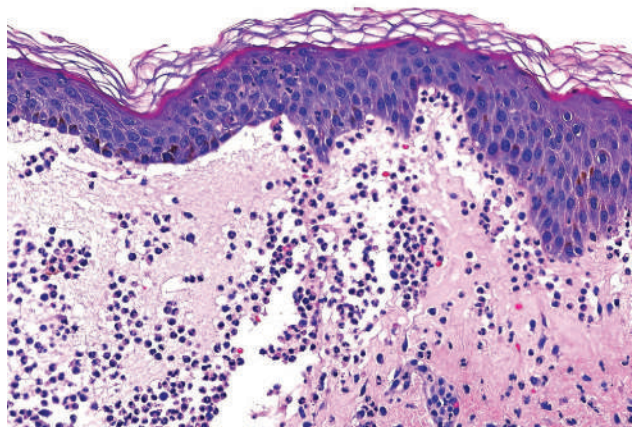


Figure 2.12 A subepidermal blister with neutrophils that may be seen in bullous lupus erythematosus, linear IgA dermatosis, and dermatitis herpetiformis.

a skin biopsy may show nonspecific changes. In these cases, depending on the clinical context, either additional biopsy or watchful waiting for more specific lesions to develop can be a reasonable course of action.

FINAL THOUGHT

As a visual specialty, physical examination in dermatology continues to play a critical role in diagnostic assessment. Accurate assessment of color, texture, morphology, and distribution is essential in the evaluation of dermatologic diseases. Becoming proficient in diagnosing skin diseases requires exposure to the wide spectrum of presentations of dermatologic disorders, especially those that are common, with follow-up and feedback—the necessary required steps toward expertise. An experienced dermatologist will rarely require additional diagnostic aids other than a physical examination. If further diagnostic confirmation is needed, a variety of diagnostic tests are available that include dermatoscopy, skin biopsy, and, shortly, artificial intelligence–augmented assessment of skin diseases.

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3 Adnexal Diseases

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ACNE

Definition: Acne vulgaris (acne) is a chronic, inflammatory disorder of the pilosebaceous unit, which affects about 85% of adolescents and young adults. The disease may result in permanent scars and often causes immense psychologic burdens, such as poor self-image, anxiety, and depression.

Overview: Four cardinal pathogenic factors of acne are follicular hyperkeratinization, sebum overproduction, bacterial colonization by *Cutibacterium acnes*, and inflammation.

Clinical presentation: Acne lesions arise on the sebaceous gland–rich areas of the face, chest, shoulders, and back. The primary lesions include open and closed comedones, papules, pustules, and abscesses or cysts. Plugging of the follicles with sebum and keratin can form skin-colored lesions that can oxidize to create blackheads.

Inflammation associated with the rupture of follicles can cause papules and pustules to form (Figure 3.1). Nodules (abscesses) are larger, deep-seated, and tender lesions that can be seen as the inflammation progresses. In severe cases, there may be deep, fluctuant, cystic lesions, which contain liquefied material (e.g., pus, blood), called pseudocysts. Lesions may subsequently evolve into transient erythema, post-inflammatory hyperpigmentation, and persistent scarring. Acne scars can be atrophic (e.g., icepick, rolling, boxcar), hypertrophic, and keloidal.

ACNE CONGLOBATA AND ACNE FULMINANS

Acne conglobata is a severe form of acne presenting with numerous inflamed papules, grouped comedones, painful nodules, cysts, sinus tracts, and severe scars, which predominantly involve the face and trunk. Acne conglobata is a component of the follicular occlusion tetrad, which is also composed of hidradenitis suppurativa, dissecting cellulitis of the scalp, and pilonidal sinus.



Figure 3.1 Multiple closed comedones, papules, and pustules on the cheek, chin, and forehead.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Figure 3.2 Acne fulminans; ulcerating, hemorrhagic, and crusted papules and nodules with scars on the chest and neck.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

Acne fulminans is a rare and severe variant of acne, which presents with painful, ulcerating, hemorrhagic, crusted, necrotizing, and destructive papules, pustules, and nodules that eventually heal with scarring (Figure 3.2). This variant primarily affects male adolescents. Unlike acne conglobata, it is typically accompanied by systemic symptoms, such as fever, arthralgia, myalgia, and weakness, and systemic findings, including leukocytosis, anemia, and osteolytic bone lesions of the sternum and clavicles.

DRUG-INDUCED ACNE

Drug-induced acne is an acneiform eruption caused by medications, dietary supplements, herbal products, and systemic steroids (Table 3.1). It often has a good prognosis, which may not require cessation of the culprit drug. Development of lesions due to epidermal growth factor inhibitors (e.g., cetuximab, erlotinib, lapatinib) is often an indicator for successful treatment response.

Laboratory studies: Patients with post-adolescent acne or accompanying clinical signs of hyperandrogenism can be screened for potential alteration in serum levels of dehydroepiandrosterone

Table 3.1 Common Culprits of Drug-Induced Acne

| |
|---|
| Topical, oral, systemic steroids |
| Hormones containing progesterone |
| Antiepileptic drugs (e.g., carbamazepine, phenytoin, phenobarbital) |
| Isoniazid |
| Lithium |
| Cyclosporine |
| Azathioprine |
| Halogens (iodides and bromides) |
| Disulfiram |
| Propylthiouracil |
| Quinidine |
| B vitamins (B6 and B12) |
| Tumor necrosis factor (TNF)-inhibitors |
| Epidermal growth factor receptor (EGFR) inhibitors |

Table 3.2 Common Treatment Regimens for Acne Vulgaris

| | Comedonal acne | Mild Papulopustular Acne | Moderate Papulopustular Acne | Severe Papulopustular Acne | Severe Nodulocystic Acne |
|-------------|--|--|---|--|---|
| First step | <ul style="list-style-type: none"> • Topical retinoid • Benzoyl peroxide | <ul style="list-style-type: none"> • Topical antibiotic and topical retinoid and/or benzoyl peroxide | <ul style="list-style-type: none"> • Topical antibiotic and topical retinoid and/or benzoyl peroxide • Oral antibiotic and topical retinoid and/or benzoyl peroxide | <ul style="list-style-type: none"> • Oral antibiotic and benzoyl peroxide and/or topical retinoid | <ul style="list-style-type: none"> • Oral isotretinoin • Oral antibiotic and topical retinoid and/or benzoyl peroxide |
| Second step | <ul style="list-style-type: none"> • Alternative topical retinoid • Azelaic acid • Salicylic acid | <ul style="list-style-type: none"> • Alternative topical combination therapy • Azelaic acid • Salicylic acid • Topical dapsone | <ul style="list-style-type: none"> • Alternative topical combination therapy • Consider a change in oral antibiotic | <ul style="list-style-type: none"> • Oral isotretinoin | |

sulfate (DHEA-S) total and free testosterone, luteinizing hormone/follicle-stimulating hormone (LH/FSH) ratio, prolactin, and 17-OH progesterone. Acne fulminans may require testing for inflammatory markers and blood counts. Histopathologic examination is rarely required.

Differential diagnosis: Acne is typically diagnosed clinically with relative ease; however, acneiform eruptions may sometimes be confused with acne.

Management: This is based on the severity of the disease and type of lesions (Table 3.2).

TOPICAL TREATMENT

Topical Retinoids

Topical retinoids regulate follicular keratinization, which can reduce microcomedo formation and offer comedolytic activity. They are also anti-inflammatory and can reduce pigmentation and scar formation. Topical retinoids include tretinoin, isotretinoin, tazarotene, adapalene, and trifarotene.

Benzoyl Peroxide

Benzoyl peroxide is not an antimicrobial, but it has bactericidal effects and can reduce the bacteria within follicles. It can help prevent antibiotic resistance from topical and systemic antibiotic therapy.

Other Topical Agents

Topical antibiotics include clindamycin and erythromycin, which can reduce the bacterial load; however, the resistance of up to 80% of *C. acnes* strains to erythromycin has been reported. These should be used in combination with other topical agents to prevent resistance. Azelaic acid can also inhibit bacterial overgrowth, regulate hyperkeratinization, and lighten post-inflammatory hyperpigmentation. Dapsone is another topical that works through anti-inflammatory and antibacterial effects, which can help with inflammatory lesions.

SYSTEMIC TREATMENT

Oral Antimicrobials

Systemic antibiotics are indicated in severe scarring acne or when topical treatment is difficult to apply. Tetracyclines (e.g., doxycycline, minocycline) are preferred due to their antibacterial and anti-inflammatory effects and lower antibiotic resistance. Doxycycline is often the first choice, with traditional dosing ranging from 100–200 mg/day. Recent evidence suggests that sub-antimicrobial

dose may also be sufficient. The most important side effects are photosensitivity and gastrointestinal upset.

Oral Isotretinoin

Isotretinoin is mainly used for the treatment of recalcitrant, severe papulopustular, and nodular acne. Isotretinoin is regarded as the most effective acne treatment; however, recurrence may develop in one-fourth of cases. Recent evidence has suggested higher cumulative doses than the traditional 120–150 mg/kg in more severe cases. Isotretinoin has many mucocutaneous side effects, including cheilitis and xerosis. Serum levels of cholesterol, triglycerides, and transaminases can elevate. The most important side is teratogenicity; therefore, effective contraception and frequent pregnancy testing are important in women of childbearing potential.

Hormonal Therapies

Hormonal therapies (i.e., antiandrogens) can be helpful in women with acne, regardless of whether hyperandrogenism is present. The most commonly used agents are combined oral contraceptive pills and spironolactone. Spironolactone can cause irregular menses, breast tenderness, headaches, nausea, and hypotension. Hyperkalemia is rare, and monitoring serum potassium is not indicated in low-risk individuals.

MAINTENANCE TREATMENT

In some patients, cure can be achieved with isotretinoin. Despite appropriate treatment, acne is a chronic and recurrent disease, and therefore, maintenance treatment is often required. The most suitable agents are topical retinoids and benzoyl peroxide.

Course: Acne vulgaris is a chronic disease that commonly manifests in adolescence. The disease has a relapsing-remitting course and may persist into adulthood. Although it has a good prognosis and usually is not associated with systemic involvement, severe acne variants should be considered in the presence of accompanying systemic symptoms or signs.

Final comment: This is a chronic disease that can manifest with visible lesions, dyspigmentation, or scarring; therefore, it has a psychosocial impact and should be treated appropriately. Although its use is limited by teratogenicity, oral isotretinoin is the most effective therapeutic agent.

FOLLICULITIS

Definition: This is inflammation of the hair follicle, which presents with erythematous papules or pustules in hair-bearing areas. It has superficial and deep forms, and it is typically caused by infectious agents, irritants, or medications.

Overview: Based on etiology, common forms of folliculitis include superficial bacterial folliculitis, gram-negative folliculitis, fungal folliculitis, viral folliculitis, and *Demodex* folliculitis.

Clinical Presentation

Bacterial Folliculitis

Overview: Clusters of pustules surrounded by an erythematous rim can manifest on the head (scalp and beard area), neck, trunk, groin, and extremities (Figure 3.3). Lesions usually heal in



Figure 3.3 Bacterial folliculitis with numerous pustules with an erythematous rim on the trunk.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

7–10 days but may also transform into furuncles. Nasal carriage of the most common pathogen, *Staphylococcus aureus*, is an important predisposing factor.

Management: Treatment with tetracyclines, especially for acne, may cause gram-negative folliculitis, which can be due to *Klebsiella*, *Enterobacter*, *Escherichia*, and *Proteus* species. It usually involves the face and is confused with acne. Hot-tub folliculitis is caused by *Pseudomonas aeruginosa* and primarily involves the trunk. This develops due to exposure to contaminated water.

Fungal Folliculitis

Overview: Dermatophytic folliculitis typically presents with follicular pustules on the surface of a red, firm, exudative, and extending plaque. It can develop in association with tinea barbae, tinea capitis, or tinea corporis. Lesions of folliculitis in tinea barbae involve the beard or mustache area. Trichophytic (Majocchi) granuloma classically occurs in women shaving their legs or when tinea corporis is first treated with topical corticosteroids. *Malassezia* (Pityrosporum) folliculitis commonly affects young males and presents with follicular papules and pustules involving the trunk, shoulders, neck, or extensor aspects of the arms. Candidal folliculitis appears as satellite pustules around the flexural lesions of candidiasis, especially in diabetics.

Demodex Folliculitis

Overview: *Demodex* normally lives in the pilosebaceous unit, but overgrowth can be associated with folliculitis. *D. folliculorum* and *D. brevis* can cause rosacea-like eruption, perioral dermatitis, or pityriasis folliculorum, especially on the zygomatic, periorbital, and nasal regions.

Laboratory studies: Histologically, superficial bacterial folliculitis demonstrates neutrophilic infiltration enclosing the follicular infundibulum and subcorneal/infundibular abscess formation. In KOH examination, hyphae and spores can be seen. *Demodex* mites can be demonstrated by direct microscopy of both superficial skin biopsy and KOH preparation.

Differential diagnosis: The differential diagnosis of folliculitis is listed in Table 3.3. The conditions mentioned in this chapter can easily mimic each other.

Management

Bacterial Folliculitis

Topical antibiotics, such as mupirocin, are used as first-line treatment. Oral antibiotics, such as dicloxacillin or cephalexin, are often required for furuncles or carbuncles. Nasal/skin decontamination can be achieved with a 5-day course of intranasal mupirocin application (twice daily) and chlorhexidine gluconate bathing. In gram-negative folliculitis, culprit antibiotics should be stopped, and oral isotretinoin has been shown to offer help.

Table 3.3 Differential Diagnosis of Folliculitis

| | |
|--|---|
| • Bacterial folliculitis | • Acne vulgaris |
| • Gram-negative folliculitis | • Papulopustular rosacea |
| • Dermatophytic folliculitis | • Perioral dermatitis |
| • <i>Malassezia</i> folliculitis | • Drug-induced folliculitis |
| • Candidal folliculitis | • Hidradenitis suppurativa |
| • Herpetic folliculitis | • Scabies |
| • <i>Demodex</i> folliculitis | • Disseminate and recurrent infundibulofolliculitis |
| • Irritant folliculitis | • Pseudofolliculitis barbae |
| • Ofuji disease | • Acne keloidalis |
| • Immunosuppression-associated eosinophilic folliculitis | • Folliculitis decalvans |
| • Eosinophilic pustular folliculitis of infancy | • Keratosis pilaris |
| | • Fox-Fordyce disease |
| | • Idiopathic follicular mucinosis |
| | • Perforating folliculitis |

Fungal Folliculitis

Dermatophytic folliculitis is treated with oral antifungals such as terbinafine, griseofulvin, or itraconazole. Antifungal shampoo (e.g., ketoconazole) can be used to prevent the spread of spores. *Malassezia* folliculitis usually responds well to topical azoles or shampoos with selenium sulfide. In patients with candidal folliculitis, the use of steroids or antibiotics should be discontinued. Topical azoles and/or oral fluconazole can be used.

Demodex Folliculitis

Therapeutic options for *Demodex* folliculitis include topical permethrin 5% cream, topical ivermectin 1% cream, and oral ivermectin. Permethrin cream can be considered as initial treatment, and in recalcitrant cases, oral agents can be added.

Course: Most forms of folliculitis are curable conditions with a good prognosis. Recurrence of infective folliculitis can be prevented by proper hygienic measures and skin decontamination.

Final comment: Folliculitis refers to a heterogeneous group of conditions that may occur due to infection or irritation or as a manifestation of inflammatory skin disease. Different types of folliculitis should be properly diagnosed to clarify preventive and therapeutic recommendations.

ROSACEA

Definition: This is a chronic, inflammatory skin disease that typically affects the central face. It is characterized by persistent erythema, papules, pustules, telangiectasias, and recurrent flushing.

Overview: Rosacea commonly affects middle-aged women who are Fitzpatrick skin types I–III. Proposed pathophysiologic mechanisms include activation of the cutaneous innate immune system, neurovascular dysregulation, and increase in density of *Demodex* mites. Ultraviolet radiation is a contributing factor.

Clinical presentation: Rosacea has four clinical subtypes: erythematotelangiectatic, papulopustular, phymatous, and ocular (Table 3.4). Rosacea often presents earlier on as the erythematotelangiectatic subtype, which is characterized by persistent erythema, recurrent flushing, and telangiectasias on mid-face (Figure 3.4). Flushing can be triggered by physical, nutritional, or psychological factors.

In the papulopustular subtype, patients have several small, dome-shaped erythematous papules and pustules on the mid-face. Unlike acne, rosacea is not typified by comedones (Figure 3.5).

Overview: In the phymatous form, sebaceous gland hypertrophy and fibrosis are present (Figure 3.6). Phyma primarily occurs in men and commonly affects the nose (rhinophyma) but may also be seen on the chin, ears, forehead, and eyelids.

Ocular involvement is present in 50–60% of patients who have rosacea, which can manifest with nonspecific symptoms, such as dryness, tearing, gritty sensation, styes, blepharitis, and itching.

Table 3.4 Summary of Clinical Subtypes of Rosacea

| Clinical Subtype | Characteristics |
|----------------------------------|--|
| Erythematotelangiectatic rosacea | <ul style="list-style-type: none"> Recurrent flushing and fixed centrofacial erythema Midfacial edema and/or telangiectasia Skin sensitivity |
| Papulopustular rosacea | <ul style="list-style-type: none"> Fixed centrofacial erythema, intermittent red papules, and pustules No comedones Persistent midfacial edema caused by intermittent inflammation |
| Phymatous rosacea | <ul style="list-style-type: none"> Sebaceous gland hypertrophy and fibrosis Flesh-colored, soft, irregular nodules Nose: Rhinophyma; Chin: Gnathophyma; Ear: Otophyma; Forehead: Metophyma; Eyelid: Blepharophyma |
| Ocular rosacea | <ul style="list-style-type: none"> Strongly suggestive: Lid margin telangiectasia, interpalpebral conjunctival injection, spade-shaped infiltrates in the cornea, scleritis, and sclerokeratitis Nonspecific: Burning, stinging, light sensitivity, and foreign object sensation |



Figure 3.4 Erythematotelangiectatic rosacea. Erythema and telangiectasias are seen on the cheeks with a few papules in the perioral region.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Figure 3.5 Severe papulopustular rosacea. Numerous papules and pustules with crust on an erythematous base can be seen on the forehead, nose, cheeks, and chin.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Figure 3.6 Papulopustular and rhinophymatous rosacea.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

There is no correlation between the presence of ocular involvement and the severity of skin disease. Ocular rosacea is historically underdiagnosed.

Rosacea fulminans (i.e., pyoderma faciale, rosacea conglobata) is a severe form that is more common in young women. In addition to diffuse facial erythema, there is sudden onset, and coalescing papules, pustules, purulent nodules, and sinuses are often seen. Short-term use of systemic corticosteroids can be helpful.

Granulomatous rosacea is a clinical variant that presents with monomorphic, 1–3-mm-sized yellow-brown or red papules or nodules on the cheeks or periorificial areas. There is an

Table 3.5 Differential Diagnosis of Rosacea

| | |
|----------------------------------|---|
| Erythematotelangiectatic rosacea | Actinic damage Photoaging with telangiectasias Seborrheic dermatitis Contact dermatitis Keratosis pilaris rubra Malar rash Flushing |
| Papulopustular rosacea | Acne Demodex folliculitis Acneiform eruption |
| Phymatous rosacea | Lupus pernio Discoid lupus erythematosus Lupus vulgaris |
| Ocular rosacea | Seborrheic dermatitis Drug-induced ocular rosacea |

Table 3.6 General Skin Care Measures in the Management of Rosacea

| |
|---|
| Avoidance of triggers, such as environmental factors (e.g., cold, heat, humidity), exercise, stress, diet, spices, histamine-rich food, alcohol, hot food |
| Use of broad-spectrum sunscreen with ultraviolet-A, ultraviolet-B, and visible-light protection |
| Cleansing using lukewarm water and soap-free cleansers |
| Moisturizing using non-oily moisturizers |
| Avoidance of topical corticosteroids |
| Avoidance of cosmetic products, such as waterproof make-up, skin toners, astringents, and abrasive exfoliators |
| Avoidance of cosmetic ingredients, such as sodium lauryl sulfate, strong fragrances, fruit acids, glycolic acids, alcohol, menthols, camphor, witch hazel, peppermint, and eucalyptus oil |

“apple-jelly” appearance on diascopy as in sarcoidosis or lupus vulgaris, and dermal noncaseating granulomas are present histologically. This variant may cause permanent scarring.

Laboratory studies: Skin biopsy is rarely required for diagnosis and can be nonspecific.

Differential diagnosis: This can be organized according to subtype (Table 3.5). Papulopustular rosacea may resemble acne, but there are typically no comedones or scarring in rosacea. Some clinical features of acne, such as truncal distribution, hyperseborrhea, and adolescent-onset are not observed in rosacea. Actinic damage can be confused with erythematotelangiectatic rosacea; however, actinic damage commonly affects the periphery of the face and neck, upper chest, and postauricular region.

Management: Management of rosacea involves general skincare practices listed in Table 3.6 and pharmacologic intervention.

In patients with erythematotelangiectatic rosacea, topical α -adrenergic agonists, such as brimonidine (α_2) or oxymetazoline ($\alpha_{1A} + \alpha_2$), can help improve erythema by causing peripheral vasoconstriction. Carvedilol is a nonselective beta-blocker and is effective in the treatment of flushing and persistent erythema. Vascular lasers (e.g., pulsed dye laser) and intense pulsed light (IPL) can also be used to treat telangiectasias and erythema.

Papulopustular rosacea should be treated with topical agents, systemic antibiotics, or oral isotretinoin. First-line topicals include metronidazole, ivermectin, and azelaic acid. Topical metronidazole is often initially preferred. Ivermectin cream demonstrates slightly higher efficacy than metronidazole in terms of reduction in inflammatory lesions. Other topical options are listed in Table 3.7.

In patients with moderate to severe inflammatory lesions, systemic antibiotics, such as doxycycline, tetracycline, or azithromycin can be used. Low-dose (0.3 mg/kg/day) oral isotretinoin is recommended for patients with moderate to severe recalcitrant papulopustular rosacea. Systemic treatments are outlined in Table 3.8.

Table 3.7 Topical Agents Used in the Treatment of Rosacea

| Drug | Mechanism | Subtype |
|-------------------------------|--|--|
| Metronidazole | Anti-inflammatory Antioxidant Antibacterial Antiparasitic | Papulopustular Erythematotelangiectatic |
| Azelaic acid | Anti-inflammatory Antioxidant Antibacterial Anti-keratinizing | Papulopustular Erythematotelangiectatic |
| Ivermectin | Anti-inflammatory Antioxidant Antiparasitic | Papulopustular Erythematotelangiectatic <i>Demodex</i> mite |
| Brimonidine | α -2 adrenergic receptor agonist Vasoconstriction | Persistent erythema |
| Oxymetazoline | α -1 adrenergic receptor agonist Vasoconstriction | Persistent erythema |
| Sodium sulfacetamide + sulfur | Antibacterial Anti-inflammatory | Papulopustular |
| Permethrin | Antiparasitic | <i>Demodex</i> mite |
| Pimecrolimus | Inhibits T-cell activation | Granulomatous rosacea |
| Tacrolimus | and proinflammatory cytokines | Steroid-induced rosacea |
| Tretinoin | Anti-inflammatory Anti-keratinizing Inhibits TLR2 | Erythematotelangiectatic Papulopustular |

Table 3.8 Systemic Medications Used in the Treatment of Rosacea

| Drug | Mechanism | Subtype |
|---------------|---|--|
| Doxycycline | Reduction of MMPs | Papulopustular |
| Tetracycline | Preventing kallikrein-5 Reduction of ROS and NO Vasoconstriction Anti-inflammatory | Granulomatous Ocular Phymatous |
| Ivermectin | Reduction of MMPs Preventing kallikrein-5 Reduction of ROS and NO Anti-inflammatory Antiparasitic | Papulopustular Granulomatous Ocular Phymatous |
| Isotretinoin | Anti-inflammatory Antioxidant Anti-keratinizing Reduction of sebaceous gland volume | Papulopustular Granulomatous Ocular Phymatous |
| Carvedilol | α 1, β 1, β 2 antagonist Vasoconstriction Antioxidant Anti-inflammatory | Erythematotelangiectatic |
| Metronidazole | Anti-inflammatory Antioxidant Antibacterial Antiparasitic | Papulopustular Granulomatous Ocular |

Abbreviations: MMPs, matrix metalloproteinases; ROS, reactive oxygen species, NO: nitric oxide.

Phyma may respond to low-dose isotretinoin if it is inflamed. In rhinophyma, isotretinoin may reduce the nasal volume and prevent progression. Severe and fibrotic forms can only be treated with physical modalities, such as surgical excision, electrosurgery, ablative lasers, and dermabrasion.

For ocular rosacea, lavage of eyelids twice daily with warm water and baby shampoo, use of eye drops, and referral to an ophthalmologist are recommended. Oral antibiotics, such as doxycycline, are helpful in most cases.

Course: It is a benign skin disease with a good prognosis that has no systemic complications. Since its chronic and recurrent nature, treatment is often required for both exacerbations and maintenance.

Final comment: This is an inflammatory syndrome affecting the midface with or without eye involvement. Management of rosacea aims to prevent symptoms, improve cosmesis, and maintain remission and involves patient education, appropriate skincare, avoidance of sunlight, and topical/oral anti-inflammatory medications, as well as interventions.

PERIORIFICAL DERMATITIS

Overview: It is characterized by multiple papules and pustules localized around the mouth, nose, or eyes. It is commonly seen in young women and children. It is often associated with topical, nasal, or inhaled steroids, fluorinated toothpaste, mouthwashes, soaps, and cosmetics. It can be more common in atopic individuals. The exact cause is not understood.

Clinical presentation: There are many tiny pustules and pink papules, or thin plaques with desquamation in perioral, perinasal, and/or periocular areas (Figure 3.7). Lesions can spread around the lip, but there is typically an unaffected zone of 5 mm from the vermilion line.

Management: Periorifical dermatitis is usually treated with topical medications, which can include metronidazole, erythromycin, clindamycin, tacrolimus, and pimecrolimus. Systemic tetracyclines (e.g., doxycycline, minocycline) can be used for initial improvement. Any topical steroid use should be stopped.

HIDRADENITIS SUPPURATIVA

Synonym: Acne inversa

Definition: Hidradenitis suppurativa (HS) is a chronic, inflammatory disorder characterized by deep-seated and tender nodules, cysts, sinus tracts, and scarring in intertriginous areas. It is often misdiagnosed as folliculitis, furuncles, or carbuncles in the early stages. The disease shows female predominance and commonly arises in the second or third decade.

Overview: Aggravation of the disease is strongly associated with two major risk factors: smoking and obesity. Hyperkeratosis, occlusion, and destruction of the follicle and inflammation of the apocrine glands are implicated in the pathogenesis.

Clinical presentation: HS lesions are primarily located in the apocrine gland-bearing areas, such as axillae and inguinal folds. Further localizations include anogenital, gluteal, sternal, mammary, submammary, and retroauricular regions. Inflamed and noninflamed nodules can progress into the characteristic multiheaded comedones or coalesce to form sinus tracts with scarring



Figure 3.7 Multiple tiny papules and pustules in perioral and periocular regions.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

(Figure 3.8). Deep-seated nodules can extend to develop abscesses in which suppuration drains to the skin surface (Figure 3.9). The discharged fluid consists of serous exudate, blood, and pus. As the disease progresses, bridged scars, fibrosis, contracture, and hardening of the skin may develop. Secondary infections can cause malodor.

Patients often report stinging, burning, itching, and warmth a few days before active lesions appear. Inflamed nodules, cysts, and sinuses are usually painful. Disease severity can be assessed with grading systems, such as the Hurley staging system.

HS is a component of the follicular occlusion tetrad in addition to acne conglobata, dissecting cellulitis, and pilonidal cyst. The disease is associated with several systemic conditions, such as Crohn's disease, pyoderma gangrenosum, diabetes mellitus, metabolic syndrome, polycystic ovary syndrome, and arthritis.

Laboratory studies: Diagnosis of HS is made clinically. Histopathology demonstrates a mixed inflammatory cell infiltrate in the deeper dermis, poral occlusion, inflammation, and fibrosis of the follicles and sweat glands. Later stages can show abscesses draining to the skin surface through a channel, tract formation containing inflammatory cells and keratin, and granulation tissue. As the disease progresses, fibrosis becomes more prominent.

Differential diagnosis: In the early stages, HS may be confused with furunculosis; however, nodules of furuncles have a central punctum and are not interconnected to form tracts. Acne, pilonidal disease, and dermoid/epidermoid cysts are also included in the differential of early lesions. Cutaneous Crohn's disease can present with perianal/genital fistulae, abscesses, and scars similar to HS, but there are no comedones, and the fistulae are linked to the gastrointestinal tract.

In advanced stages, the nodular, draining, ulcerating, indurated, and scarring lesions of HS may resemble infectious/granulomatous skin diseases, such as cutaneous tuberculosis, syphilis, granuloma inguinale, lymphogranuloma venereum, tularemia, actinomycosis, nocardiosis, and cat-scratch disease.

Management: This includes lifestyle modifications, treatment with topical or systemic pharmacologic agents, and surgical or laser interventions. The severity of the disease determines the therapeutic approach.

General measures include weight reduction, smoking cessation, reducing friction by wearing loose clothing, and skin decontamination using antiseptic scrubs or antibacterial soaps. Warm compresses can be beneficial. Patients should be screened for accompanying metabolic conditions.

Topical clindamycin is preferred as a first-line treatment in cases with mild to moderate inflammatory lesions. Topical dapsone or resorcinol can be used for their anti-inflammatory effects. Oral antibiotics (e.g., doxycycline, tetracycline, clindamycin, rifampin) are another first-line treatment option, and combination therapy is commonly required.



Figure 3.8 Multiheaded comedones, sinus tracts, draining sinuses, and scarring in the axilla.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Figure 3.9 Abscess with sinus tracts that drain to the skin surface.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

Antiandrogenic therapy is considered second-line treatment, especially for women with mild or moderate HS. Spironolactone can be used in women who experience hormonal flares. Metformin can inhibit the production of pro-inflammatory cytokines, reduce insulin resistance, and exert anti-androgenic effects.

Intralesional triamcinolone acetonide injection is an effective adjunctive therapy for individual lesions when inflamed. Oral retinoids do not appear to be effective enough. The results of the case series regarding the use of isotretinoin in HS have been disappointing.

Biologic agents can be considered in moderate to severe cases that are recalcitrant to conventional therapies. TNF- α inhibitors used for the treatment of HS include adalimumab and infliximab. Other biologic therapies have been utilized with varying degrees of success.

Surgery involves either limited or extensive excision and aims to improve the quality of life. It is non-curative and does not replace medical treatment, but it can offer benefit in severe, recalcitrant disease that includes scarring and sinus tracts. Deroofing of the sinus tracts, cysts, or abscesses is associated with fewer overall complications; however, wide excision has been shown to have lower rates of recurrence. Nd: YAG and carbon dioxide laser treatment have offered significant improvement in several studies.

Course: HS is a chronic, recurring, and debilitating disorder that is associated with poor quality of life and significant psychosocial morbidity. HS has many complications, including secondary amyloidosis, anemia, fistulae to the urinary or gastrointestinal tract, and lymphedema. Squamous cell carcinoma can rarely arise in sites of chronic lesions.

FINAL THOUGHT

HS is an unpleasant disease for both the patient and the physician. Lesions are often tender, draining, suppurating, and malodorous. Because HS is incurable, treatment is often difficult; however, proper disease management can offer improvement, especially in the quality of life.

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4 Papulosquamous Diseases

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PSORIASIS

Definition: This is a chronic, systemic inflammatory disease that affects the skin and is the most common papulosquamous disease. Numerous systemic effects, such as hyperlipidemia, cardiovascular disease, diabetes mellitus, depression, inflammatory bowel disease, nonalcoholic fatty liver disease, and metabolic syndrome may accompany it.

Overview: Psoriasis can be seen in every age, gender, and race; however, it peaks between 16–22 and 57–60 years of age. Although its frequency varies by country, it is estimated to be between 0.09–11.8% of the general population.

Psoriasis is a multifactorial genetic disease that has been associated with many genes and pathways, especially HLA-CW*06, interleukin (IL)4, IL23/17 axis, and NF-κB signaling. Stress, humid and cold weather, trauma, smoking, obesity, HIV infection, beta-blockers, lithium, antimalarials, antidepressants, antivirals, and nonsteroidal anti-inflammatory medications are among the potential triggers. Streptococcal pharyngitis is known to initiate guttate psoriasis, especially in pediatric patients.

Clinical presentation: Psoriasis has different forms, such as psoriasis vulgaris (PV), pustular psoriasis, guttate psoriasis, inverse psoriasis, erythrodermic psoriasis, and palmoplantar psoriasis, which can be associated with psoriatic arthritis.

The most common form is PV and accounts for 80–90% of all cases. Lesions are often symmetric, well-demarcated, pink, scaly plaques (Figure 4.1). Lesions may differ in size and shape. Knees, elbows, scalp, and sacral region are frequently involved; however, lesions can be observed in all areas of the body (Figure 4.2).

There are a number of phenomena that can help to diagnose PV. For the “wax spot phenomenon,” when the lesion is scraped with the blunt tip of a scalpel, the scale sheds in thin white layers, which indicates parakeratotic hyperkeratosis. If the lesion continues to be scraped, a sticky and wet layer is reached; this is the lowest layer of the dermal papillae, and this finding is called as the “last membrane phenomenon.” When the lesion is scraped even further, bleeding foci are seen

Table 4.1 Pathogenesis of Psoriasis

| Keratinocyte Hyperproliferation | Vasodilation in Dermal Capillaries | Proinflammatory Mediator Release |
|---|--|--|
| <ul style="list-style-type: none">• Acceleration in cell turnover• Rapid desquamation of keratinocytes• Abnormal maturation and thickening of the stratum corneum | <ul style="list-style-type: none">• Angiogenesis• Lymphocyte and neutrophil penetration into the skin | <ul style="list-style-type: none">• Increased release of interleukin, endothelin, IFN-γ, TNF-α, and vascular endothelial growth factor• T-cell activation• Immune response onset |



Figure 4.1 Psoriasis vulgaris with erythematous scaly plaques on the elbow and arm.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Figure 4.2 Psoriasis vulgaris with erythematous scaly papules and plaques on the back and arms.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

as tiny pinheads. This finding is the “Auspitz sign” and indicates papillomatosis in the dermal papilla. While the lesions are healing, they can be surrounded by a hypopigmented ring, called the “Woronoff ring.”

Guttate psoriasis is more common in children and young adults. Lesions are in the form of multiple, small, erythematous, scaly plaques that are 0.5–1.5 cm in diameter. Streptococcal throat infection is believed to precede many cases. A relationship has been found with HLA-CW*0602.

Inverse psoriasis is a variant that involves the retroauricular region, axillae, inframammary, inguinal, and intergluteal areas. It can be seen alone or together with other forms of psoriasis. It appears as well-defined, wet, erythematous plaques, and scale is not expected.

Pustular psoriasis is a clinical variant in which pustules are located on erythematous areas, which can be generalized or localized. It is seen at the rate of 1.2–1.8% among all forms of psoriasis. Its acute generalized form is also called von Zumbusch disease (Figure 4.3). Patients typically have fever, and pustules appear suddenly. It is more common between 30–50 years and in women. Its etiology includes drugs, such as terbinafine, amoxicillin, sulfonamides, and lithium, as well as infection, pregnancy, hypoparathyroidism, hypocalcemia, and ultraviolet radiation. Occasionally, it can emerge as a result of the sudden discontinuation of treatments in patients with psoriasis. Eye and nail involvement, along with a geographic tongue, can be observed. Fever, arthralgia, myalgia, malaise, and abdominal pain are common.

In localized pustular forms, fingers are typically involved (Figure 4.4), which has been called acrodermatitis continua of Hallopeau, acropustulosis, pustular acrodermatitis, acrodermatitis perstans, and dermatitis repens. It is common in middle-aged women. It starts in the form of sterile pustules in the nail folds and beds. The pustules combine to form pustule ponds that may open and form painful erosions. Onychodystrophy and anonychia may develop due to nail bed and matrix involvement. It usually starts on a few fingers and then extends onto the hands, forearm, and feet over time. Hand involvement is more common.

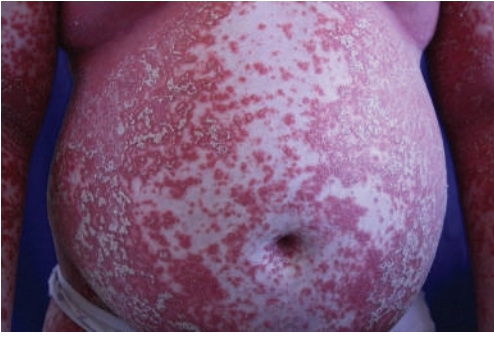


Figure 4.3 Pustular psoriasis with multiple pustules located on erythematous plaques on the chest, abdomen, flanks, and arms.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Figure 4.4 Localized pustular psoriasis, acropustulosis.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.

Figure 4.5 Psoriatic arthritis with asymmetric oligoarthritis of the hands.

Source: Courtesy of Istanbul Medeniyet University Dermatology Clinic.



Palmoplantar psoriasis can be encountered alone or in combination with other forms. Lesions are well-defined, hard, and thick scaly plaques, especially in the plantar region, which are sometimes accompanied by thick fissures. Erythema can be seen but is not always expected. It may be painful.

The most common comorbidity is psoriatic arthritis, which is a seronegative arthritis (Figure 4.5). It accompanies 5–7% of patients and can reach nearly 30% in those with severe psoriasis. It is seen equally in both genders. Although it can be positive, HLA-B27 is typically negative. Asymmetric oligoarthritis is the most common clinical presentation, and dactylitis and enthesitis can be seen. Joint pain and swelling, heel pain, and morning stiffness are common symptoms, and nail involvement is common.

Laboratory studies: Clinical findings are generally sufficient for diagnosis. In ambiguous cases, histopathologic examination can be helpful, which shows an elongation of the rete ridges and dermal papillae, edema of the dermal papillae, enlargement of blood vessels, thinning of the suprapapillary plates, parakeratosis, compact orthokeratosis, spongiform pustules, microabscesses caused by neutrophil accumulation in the upper portion of the epidermis, and regular acanthosis. Dilated capillaries and keratinocyte proliferation are expected in all stages.

Dermatoscopy can reveal red dot and globules; diffuse, patched, polygonal, and twisted vessels; and diffuse, patched, central, or peripheral scale.

Table 4.2 Nail Changes Seen in Psoriasis

| Inflammation of the nail matrix | Inflammation in the nail bed | Hyponychium and proximal nail fold |
|---------------------------------|------------------------------|--|
| Pitting | Onycholysis | Irregularly dispersed and tortuous veins |
| Onychomadesis | Splinter hemorrhages | |
| Leukonychia | Subungual hyperkeratosis | |
| Beau's lines | Oil-drop (salmon) patches | |
| Red spots on lunula | | |
| Separation in nail plate | | |

Blood tests may be abnormal due to comorbidities, but laboratory findings are generally normal. Hyperuricemia can be seen in patients with extensive lesions. In psoriatic arthritis, C-positive protein (CRP) and erythrocyte sedimentation rate (ESR) can be elevated. In the generalized form of pustular psoriasis, leukocytosis, hypoalbuminemia, hypocalcemia, and elevated CRP and ESR can be observed.

Patients should be screened at regular intervals for comorbidities, such as metabolic syndrome, diabetes mellitus, hypertension, cardiovascular disease, inflammatory bowel disease, and liver dysfunction.

Differential diagnosis: This includes nummular dermatitis, seborrheic dermatitis, pityriasis rosea, pityriasis rubra pilaris, syphilis, atopic dermatitis, pityriasis lichenoides chronica, parapsoriasis, and mycosis fungoides. In pustular forms, acute generalized exanthematous pustulosis, IgA pemphigus, and pustular drug eruption should be considered. In localized pustular forms, bacterial paronychia, herpetic whitlow, chronic candidiasis, and acrodermatitis enteropathica can be considered.

Management: Treatment decision depends on the clinical type, severity, extent, duration, response to previous treatments, and psychosocial status of the patient.

Topical Treatment

Topical treatments are typically sufficient in mild to moderate cases. Corticosteroids are anti-inflammatory, antiproliferative, and immunosuppressive. Treatment with high-potency corticosteroids is often started initially followed by lower potency formulations for maintenance as needed. Stronger corticosteroids should generally not be used for more than a few weeks at a time. For thick scaly plaques, it is useful to combine them with a keratolytic agent, such as salicylic acid, urea, or a retinoid (e.g., tazarotene), in order to increase penetration. Low- or medium-potency steroids should be used in inverse areas and on the face.

Anthralin and coal tar have been used with some benefit, but they have largely been replaced with topical steroids and steroid-sparing agents, such as calcipotriol and calcineurin inhibitors. Anthralin is mostly preferred in plaque psoriasis and used in short-term contact or combined preparations. Coal tar can be effective in reducing the thickness of scale in scalp psoriasis. Calcipotriol is a vitamin D analogue that suppresses inflammation and reduces the proliferation of epidermal keratinocytes in psoriasis. It is available alone or in combination with corticosteroids. Topical calcineurin inhibitors include tacrolimus and pimecrolimus. They can be particularly effective as maintenance treatment and in children.

Systemic Treatment

Systemic treatments are preferred in moderate to severe cases and those resistant to topical therapy or phototherapy. Agents include acitretin, methotrexate, cyclosporine, biologic agents, and steroids.

Acitretin can be used in all types of psoriasis and can be especially helpful in pustular psoriasis. Response can be observed after 4–6 weeks, but maximal effect is typically seen after 3–4 months. Once the disease stabilizes, the dose can be reduced for maintenance. Side effects are generally dose dependent and include skin dryness, cheilitis, palmoplantar desquamation, irritation, myalgia, hair loss, increased triglycerides, and increased liver function markers. Acitretin should not be used in women of childbearing age due to its teratogenicity.