

Chapter 4 Skin Lesions

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The most fundamental and important methods of medical examination for skin diseases are visual inspection and palpation. The recent development of biochemical and immune system examination methods has made diagnosis more accurate. However, naked-eye and dermoscopy inspection and palpation are always the most important in acquiring information on the nature of skin lesions, including their distribution, form, color, shape and firmness.

A skin lesion is generally called an eruption. Eruptions are divided into primary lesions, which occur in normal skin, and secondary lesions, which are caused secondarily by other eruptions. This chapter briefly discusses the terminology for describing the characteristics of various types of eruptions.

A. Primary skin lesions



Fig. 4.1 Erythema.
Annular erythema in a patient with Sjögren syndrome.

An eruption that occurs in normal skin without any preexisting eruptions is called a primary lesion. These include patches, where the only change is color; papules, nodules and tumors, which are elevated; blisters, cysts and pustules, which contain serum, keratinized substances, pus, etc.; and urticaria, which is temporarily elevated.

1. Erythema

Erythema is patchy redness produced by vasodilation and hyperemia in the dermal papillae and the subpapillary layer (Figs. 4.1 and 4.2). In erythema, although the blood volume increases in the dermal blood vessels, there is no blood leakage into the extravascular dermis. Thus the bloody color fades under the pressure of a glass plate (diascopy). Erythema produced at the periphery of other eruptions such as papules, bullae and pustules is described as a red halo.

2. Purpura

Purpura is purple to bright red hemorrhaging in the skin (Figs. 4.2 and 4.3). The color of the blood does not fade in diascopy,

Unusual erythema and purpura MEMO
Bleeding may occur in the superficial epidermis, making the epidermis appear red. The red does not fade by diascopy, unlike in the usual erythema. Vasodilation may occur in the dermal deep layer, making that layer appear purple.

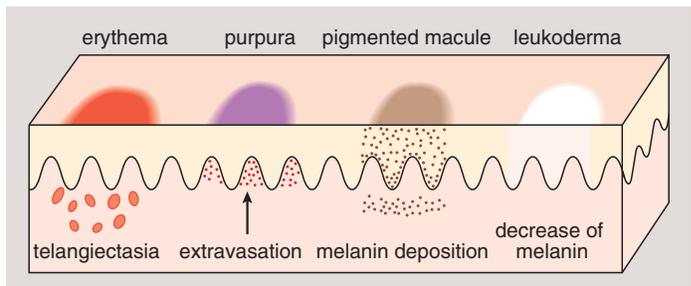


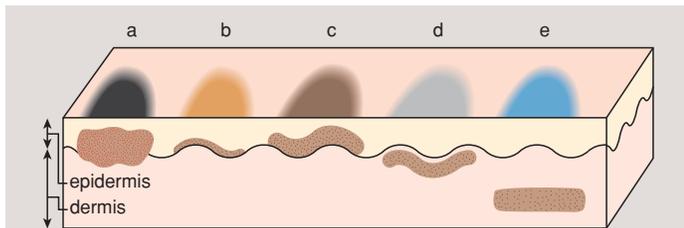
Fig. 4.2 Skin lesions.
Macule colors and their respective changes.

because hemorrhage causes blood leakage into the dermis, which distinguishes it from erythema. A purpura of 2 mm or less in diameter is called a petechia. A purpura that is larger than a petechia is called ecchymosis, and an even larger elevated purpura is called a hematoma. The red of a purpura is fairly bright shortly after bleeding begins (from the hemoglobin) but becomes brownish (from hemosiderin) over time. When macrophages phagocytose and decompose the leaked blood cells, the color fades.

3. Pigmented macule ★

A pigmented macule is a patch of brown, yellow, blue or other color, depending on the deposited substance (Figs. 4.2 and 4.4). It is most commonly caused by deposition of melanin, the next most common causes being deposition of hemosiderin, carotin, bile pigment, drugs or other foreign substances (e.g., metal, charcoal).

The macule color changes from brown to blackish brown with increased melanins in the epidermal basal layer, and ranges from gray to purplish brown in the papillary dermis. It becomes blue with deposition in the deep dermal layer. The sites of melanin pigmentation in various diseases are listed in Fig. 4.5.



Site of melanin deposition and disorder

Site of deposition	Color of lesion	Disorder
a) Intraepidermis~ dermo-epidermal junction	Black	nevus-cell nevus (compound), malignant melanoma
b) Basement membrane	Deep brown	Melasma, nevus spilus, café-au-lait spot
c) Basement membrane~ the middle of the epidermis	Brown to black	nevus-cell nevus (junctional)
d) Dermal papilla	Violaceous to brown	Lichen planus, incontinentia pigmenti, fixed drug eruption
e) Deep dermis	Bluish	Mongolian spot, blue nevus, Ota's nevus

Fig. 4.5 Association between the site of melanin deposition and the color of the lesion.

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Fig. 4.3 Purpura.
Henoch-Schönlein purpura.

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Fig. 4.4 Pigmented macule.
Senile freckle.

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Fig. 4.6 Leukoderma.
Vitiligo vulgaris.

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Fig. 4.8 Papule.
Lichen nitidus.

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Fig. 4.9 Nodule.
Dermatofibrosarcoma protuberans.

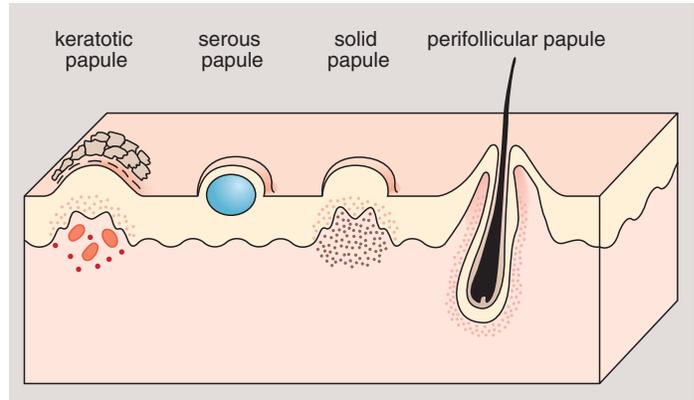


Fig. 4.7 Various papules.

4. Leukoderma ★

Leukoderma is a white patch produced by depigmentation or local anemia (Figs. 4.2 and 4.6). Depigmentation is caused by abnormal production of melanins, such as in vitiligo vulgaris (Chapter 16). Nevus anemicus causes local anemia leading to leukoderma (Chapter 20). Leukoderma in the periphery of an eruption is called a white halo.

5. Papule ★★

A papule is a localized elevated lesion of 10 mm or less in diameter (Figs. 4.7 and 4.8) with a hemispheric or flat shape. It is characterized by a surface that can be smooth, eroded, ulcerative, hyperkeratotic or crusted. It may be caused by a proliferative or inflammatory change in the epidermis, or by dermal edema. Papules are distinguished by naked-eye observation as serous (with a vesicle on the top; e.g., eczema and dermatitis), solid (without blistering; e.g., neoplastic lesions, dermal edema), follicular (associated with hair follicles) or non-follicular (not associated with hair follicles).

6. Nodule, Tumor ★★

A nodule is a localized lesion that appears as a papule with a diameter of 10 to 20 mm (Fig. 4.9). It can have various causes, such as tumor formation, granulomatous change, inflammation or edema. An intensely proliferative nodule with an elevation of 30 mm or more in diameter is called a tumor.

7. Blister ★★

A blister is a skin elevation of 5 mm or more in diameter enclosed by a membrane and containing transparent fluid that is mainly plasma and cellular material. A small blister with a diameter

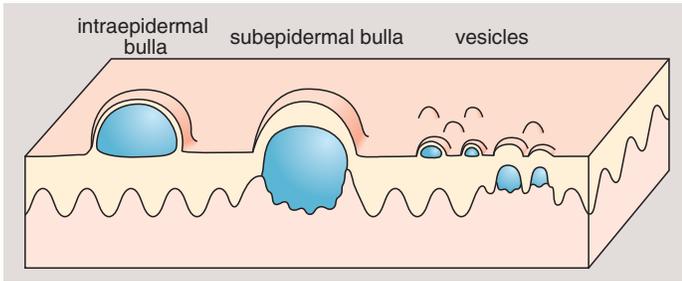


Fig. 4.10 Blisters.

of less than 5 mm is called a vesicle (Figs. 4.10 and 4.11). A hemorrhagic blister containing serum mixed with blood is referred to as a bloody bulla.

A blister with a flaccid covering (flaccid bulla) breaks easily. A flaccid bulla is often produced by exfoliation of the suprabasal cell layer (e.g., in pemphigus or impetigo contagiosa). A bulla with a thick, tight covering formed under the epidermis is called a tense bulla (e.g., pemphigoid, dermatitis herpetiformis). It does not break as easily as a flaccid bulla. During an infectious episode, a variolar bulla is observed; this is a bulla with a central concavity.

Blocked by the thick horny cell layer, a blister on the palms or soles does not elevate, but presents a droplet-like appearance. Such a blister is called a pompholyx. When it occurs in the mucous membrane, the covering of the aphtha breaks spontaneously. Pompholyx with painful erosion and peripheral erythema are included in aphthae (Fig. 4.21).

8. Pustule ★

A pustule is a yellowish blister with purulent contents (neutrophils) (Figs. 4.12 and 4.13). It may be produced by bacterial infection or by leukocytes that migrate for some other reason (sterile pustules). Diseases that produce multiple sterile pustules are generally called pustuloses (Chapter 14).

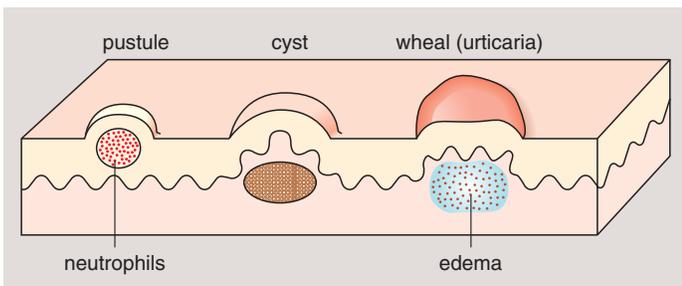


Fig. 4.12 Pustule, cyst and wheal.

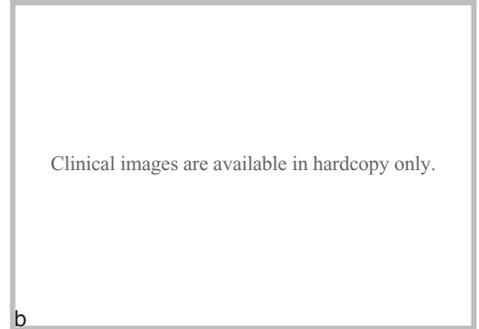
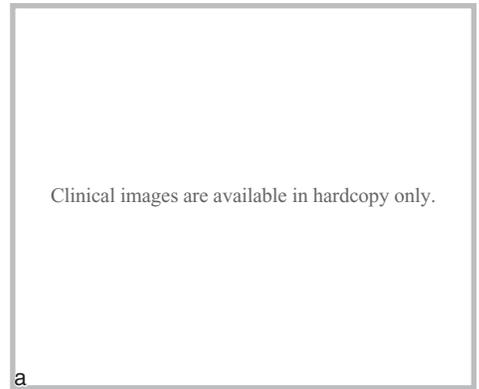


Fig. 4.11 Blisters.
a: Bullous pemphigoid. b: Insect bite.

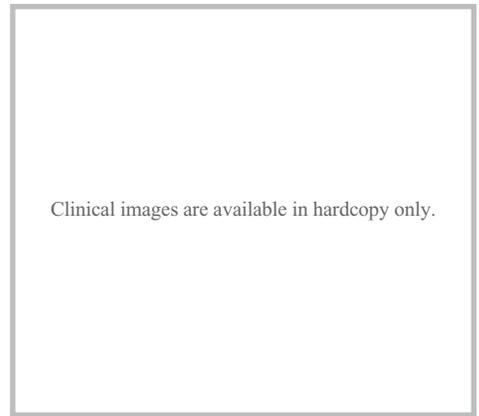


Fig. 4.13 Pustule.
Palmoplantar pustulosis (localized pustular psoriasis).

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Fig. 4.14 Cyst.
Epidermal cyst.

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Fig. 4.15 Wheal.
Acute urticaria.

9. Cyst



A cyst is a closed tumorous lesion covered by a membranous lining, which does not always elevate above the skin. The covering consists of epithelial tissue or connective tissue containing keratinous substances (observed in epidermal cysts, for example) or fluid components (e.g., in eccrine and apocrine hydrocystomas) (Figs. 4.12 and 4.14).

10. Wheal, Urticaria



Urticaria is localized edema that disappears in a short period of time (usually within several hours, and always within 24 hours). It usually appears light pink with a slightly flat elevation. It is accompanied by itching and heals without scarring in most cases (Figs. 4.12 and 4.15). “Wheal” and “urticaria” are often used synonymously, although the former is the name of an eruption and the latter is a condition presenting these eruptions.

B. Secondary skin lesions

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Fig. 4.16 Atrophy.
Widespread striae atrophicae.

A secondary lesion is an eruption that occurs secondarily after a primary or other skin lesion.

1. Atrophy



Skin atrophy is when skin becomes thin or has a smooth or finely wrinkled surface (Figs. 4.16 and 4.17). The secretory function is reduced, and the skin surface dries. Aging leads to skin atrophy, including subcutaneous lipoatrophy, striae atrophicae caused by steroids (Chapter 18), kraurosis vulvae and macular atrophy.

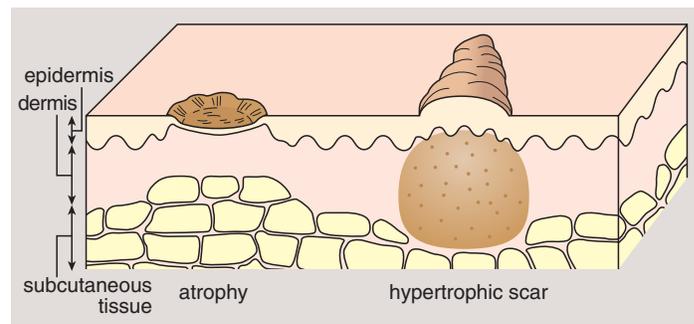


Fig. 4.17 Atrophy and hypertrophic scar.