shift of the nuclei in leukocytes), and CRP positive are observed. Hepatic enzyme levels increase in some cases. Bacteria are easily detected from the pus in the lesion. Bacterial culture is more difficult to perform in cases without pus discharge.

**Differential diagnosis**

Lesions caused by erysipelas are superficial and the progressive lesions are sharply circumscribed; however, differentiation from cellulitis is difficult. Necrotizing fasciitis is accompanied by purpura, blisters, bloody blisters and severe systemic symptoms. Thrombophlebitis, erythema nodosum, insect bites and herpes zoster should also be differentiated from cellulitis.

**Treatment**

Systemic administration or intravenous cefem antibiotics and bed rest are the main treatments. Necrotizing fasciitis is suspected when non-localized symptoms present, including high fever, abnormally high leukocyte and CRP levels, and marked systemic symptoms.

### 4. Folliculitis

**Synonym:** Acne vulgaris

**Outline**
- It is a localized bacterial infection in a single hair follicle.
- It is a pustule accompanied by erythema.
- Folliculitis that occurs on the face in puberty is called acne vulgaris.
- It may progress to furuncle or carbuncle.
- The main treatments are skin care and topical or oral antibiotics.

**Clinical features**

Erythema and pustule occur at the hair follicle (Fig. 24.5). The skin lesion forms crust in several days and heals without scarring in most cases. Superficial folliculitis that causes multiple eruptions on the face especially in puberty is called acne vulgaris (Chapter 19). Deep-seated folliculitis is accompanied by intense inflammatory symptoms and may progress to furuncle or carbuncle in some cases. The deep-seated folliculitis in the barba areas is called sycosis vulgaris.

**Pathogenesis**

A hair follicle is infected by *Staphylococcus aureus* or *Staphylococcus epidermidis*. A minor trauma, obstruction and scratch around a hair follicle, or topical application of steroids may induce the infection. The hair follicle becomes inflamed.

**Treatment**

When there are only a few eruptions, folliculitis heals
spontaneously and can be left untreated. Topical or oral antibiotics are used in cases with multiple eruptions.

5. Furuncle, Carbuncle

Outline

- It is advanced folliculitis. Pustular plug forms at the center of the skin lesion. There is purulent swelling.
- It is called a furuncle when a single hair follicle is involved, and a carbuncle when the furuncle spreads to multiple hair follicles. When a furuncle occurs over a long period of time or when multiple furuncles occur at the same time, it is called furunculosis.
- Administration of antibiotics, and incision and drainage of pus are the main treatments.

Clinical features

A small red follicular papule or pustule (folliculitis) appears and is accompanied by induration. Reddening, tenderness, spontaneous pain, and localized heat sensation become marked. The pustule develops a pustular plug. The induration softens and becomes an abscess. Inflammatory symptoms quickly subside when the pus discharges, and in 1 or 2 weeks the furuncle heals leaving a small scar. When a furuncle repeatedly recurs over a long period of time or when multiple furuncles occur, it is called furunculosis. Immunodeficiency from diabetes or malignant tumor underlies many cases of furunculosis.

A carbuncle is a further aggravated furuncle whose inflammation spreads to multiple peripheral hair follicles. It is accompanied by sharp pain, fever and systemic fatigue. Areas of stretching, such as the back, thighs and nape of the neck, are often involved. Carbuncles are dome-shaped, reddening or swelling induration with several pustular plugs at the top (Fig. 24.6).

Pathogenesis

In most cases, *Staphylococcus aureus* invades a hair follicle and causes follicular inflammation (Fig. 24.7). An underlying
condition such as diabetes is present in the most severe cases of furuncle or carbuncle.

**Diagnosis**

Painful, pointy red swelling occurs in a hair follicle. Diagnosis can be confirmed when a pustular plug is seen in the center of the eruption. It may be difficult to differentiate infectious epidermal cyst from furuncle or carbuncle.

**Differential diagnosis**

An infectious epidermal cyst is an inflamed cyst that develops abscesses. White gruel-like contents and the cyst wall discharge from the dome-shaped elevation by small incision. Hidradenitis suppurativa occurs, most frequently on sites with apocrine sweat glands, such as axillary fossae. It progresses slowly, and pustular plugs do not form.

**Treatment**

Antibiotics effective against *Staphylococcus aureus* are administered orally, or intravenously in severe cases. Incision and drainage of pus is conducted in cases with palpable pulsation.

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**6. Bacterial paronychia**

**Outline**

- It is purulent inflammation in the fingers and toes from paronychia.
- The widely used term “whitlow” often refers to herpetic whitlow.
- The main symptom is pulsating reddening accompanied by sharp pain.
- Bed rest, administration of antibacterial drugs, and incision and drainage of pus are the main treatments.

**Clinical features, Classification**

Intense throbbing pain, swelling, reddening and heat sensation occur in the periungual region and distal portion of the finger ([Fig. 24.8](#)). The nail plate may appear green when the infection is caused by *Pseudomonas aeruginosa*, which produces that pigment. The nail may exfoliate.

**Pathogenesis**

The main causes of bacterial paronychia are *Staphylococcus aureus*, *Staphylococcus pyogenes*, coliform bacilli, and *Pseudomonas aeruginosa*. Minor trauma and ingrown nails often induce it.

**Differential diagnosis**

Mucous cyst, glomus tumor, metastatic cancer, Osler’s node, herpes whitlow and candidal paronychia should be differentiated
from whitlow.

**Treatment**

Cooling the affected site and administering antibiotics that are effective against *Staphylococcus aureus* and *Staphylococcus pyogenes* are the main treatments. Incision and drainage of pus are necessary in many cases.

### 7. Multiple sweat gland abscesses in infants *

Multiple painful pustules and subcutaneous induration occur on the face, scalp and buttocks of newborns and infants, most frequently in summer. The eruptions mix with miliaria. Miliaria appears first as a precursor in which *Staphylococcus aureus* infection occurs, resulting in multiple sweat gland abscesses. Eccrine sweat glands are mainly involved. Antibacterials against *Streptococcus* are administered. The skin should be kept clean for preventive purposes by frequent changing of clothes.

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**B. Chronic pyodermas**

**Definition, Classification**

Chronic pyoderma is a general term for chronic purulent diseases in which multiple obliteratorative lesions of hair follicles are infected by bacteria, leading to prolonged inflammatory reaction or granulomatous inflammation. Many diagnostic names for chronic pyoderma exist; in fact, they all refer to the same disease. The axillary fossae, scalp and buttocks are most commonly involved. Diseases that are typically classified as chronic pyoderma are listed below (Fig. 24.9). Squamous cell carcinoma may originate from these conditions.

**Fig. 24.9 Classification of chronic pyoderma.**

**Fig. 24.10 Hidradenitis suppurativa.**

Subcutaneous nodules of several millimeters in diameter on the axillary fossae rupture spontaneously. The lesion softens and coalesces, leading to formation of scarring plaques.

**Fig. 24.11 Dermatitis papillaris capillitii.**

Thickening and scarring plaques on the back of head and neck.