3. Trichophytic granuloma

Synonym: Majocchi’s granuloma

A nodule appears intradermally, subcutaneously, or in a skin lesion caused by tinea superficialis. Flat infiltrative plaques or tumorous plaques may form (Fig. 25.12). The granuloma may occur locally (localized granuloma trichophyticum) or multiply on the whole body (generalized granuloma trichophyticum). Localized granuloma trichophyticum may be associated with misuse or abuse of topical steroids. Oral antifungal drugs are the main treatment. The condition often occurs in immunocompromised individuals such as organ transplantation recipient.

Clinical images are available in hardcopy only.

Fig. 25.12 Granuloma trichophyticum.
Infiltrative skin lesion from prolonged use of topical steroids on granuloma trichophyticum. This was misdiagnosed as eczema.

Trichophytid

Trichophytid is thought to be an allergic reaction to fungal components or metabolites. Like tuberculid, this is an “id” lesion, which reflects the intense inflammatory reaction that accompanies tinea infection. Patients with severe tinea are most frequently affected. Erythema, papules and vesicles occur on contralateral sites of the body that are not affected by tinea. Trichophytid often occurs during the exacerbation of kerion celsi or tinea pedis. Fungi of the genus Trichophyton do not exist at sites of eruptions.

B. Candidiases

Outline

● It is an infection of the skin or mucous membrane caused by yeasts of the genus Candida.
● It is classified by location and clinical features into three subtypes: cutaneous candidiasis (e.g., candida intertrigo, erythema mycoticum infantile, candidal paronychia), mucosal candidiasis (thrush, genital candidiasis), and atypical candidiasis (e.g., chronic mucocutaneous candidiasis).
● It may also occur as an occupational disease in workers whose hands are in frequent contact with water, or as a sexually transmitted disease or an opportunistic infection resulting from immunodeficiency.
● The affected site should be kept clean and dry. The antifungal imidazole is topically applied.

Classification, Pathogenesis, Clinical features

There are seven to ten virulent species in the genus Candida (Table 25.3). The main causative species is known to be Candida

Table 25.3 The Candida species most frequently cultured from humans.

<table>
<thead>
<tr>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. albicans</td>
</tr>
<tr>
<td>C. tropicalis</td>
</tr>
<tr>
<td>C. guilliermondii</td>
</tr>
<tr>
<td>C. krusei</td>
</tr>
<tr>
<td>C. kefyr</td>
</tr>
<tr>
<td>C. glabrata</td>
</tr>
<tr>
<td>C. parapsilosis</td>
</tr>
<tr>
<td>C. lusitaniae</td>
</tr>
<tr>
<td>C. zeylanoides</td>
</tr>
<tr>
<td>C. glabrata</td>
</tr>
</tbody>
</table>
Candidiasis cannot be diagnosed only by culturing fungi taken from the skin lesion, because the fungi inhabit the oral cavity, stool and vagina even in healthy individuals. Proliferation of Candida should be confirmed directly by microscopy of scales, leucorrhoea, or nail fragments. Candidiasis can also be an endogenous mycosis or an opportunistic infection.

Candidiasis in dermatology is classified by location and clinical features into three main subtypes: cutaneous, mucosal and atypical. These are subdivided into various diseases (Table 25.4).

**Diagnosis**

Racemose spores and pseudohyphae are observed by direct microscopy with KOH solution (Fig. 25.13). For candidal paronychia, a small amount of horny cell layer scraped by scalpel is examined. Tongue fur or leucorrhoea is examined for mucosal lesion. When cultured in Sabouraud’s glucose agar at 25˚C, white or cream-colored aggregation of candida forms in 2 to 3 days.

**Treatment**

Most cases are improved by bathing, cleansing, topical application of zinc oxide ointment, and keeping the affected site dry. Topical antifungal agents such as imidazole are extremely effective against cutaneous candidiasis. In oral candidiasis, gargling with amphotericin B syrup or oral miconazole gel is useful. Vaginal suppositories containing miconazole are given to treat genital candidiasis in women. Oral antifungal drugs (e.g., itraconazole and fluconazole) and intravenous fluconazole may be necessary in severe cases.

### a. Cutaneous candidiasis

**1. Candida intertrigo**

Sharply margined erythema with scales at the periphery, erosive in some cases, is induced by sweating or poor hygiene in intertriginous regions, such as the genitocrural region, buttocks, neck and nuchal region, and axillary fossae, or in the inframammary region. Mild itching and sharp pain may be present. Diabetes, malignant tumor or immunodeficiency tend to be associated with the occurrence of candida intertrigo. It is necessary to differentiate candida intertrigo from eczema and Paget’s disease.

Candida intertrigo in healthy infants under the age of 3 months is called erythema mycoticum infantile or napkin candidiasis. In this disorder, sharply margined erythema covered with thin scales occurs in the genitocrural region, perianal region, buttocks and thighs. The incidence is highest during summer, from increased perspiration. Candida intertrigo should be differentiated from miliaria and diaper dermatitis.
2. **Interdigital candidiasis**

Synonym: Erosio interdigitalis blastomycetica

The third interdigital cleft is most frequently involved. Erythema appears on the interdigital areas and gradually enlarges. The center of the erythema becomes moist, vivid red and erosive, with an infiltrative white rim (Fig. 25.14). It may be accompanied by mild pain or itching.

3. **Periungual candidiasis**

As with interdigital candidiasis, it occurs often in those whose hands are in water a great deal. Reddening and swelling occur in the periungual region of the fingers (Fig. 25.15). Pus may be discharged from the nail by pressure. Deformity may appear at the nail root. It takes several months to heal and tends to recur.

4. **Candida onychomycosis**

*Candida albicans* parasitizes nails, causing hyperkeratosis under the nail plate and deformity and fragmentation of the nail (Fig. 25.16). Since candida onychomycosis cannot be clinically distinguished from tinea unguium, culture is necessary for diagnosis. Hyphae are the main findings obtained by direct microscopy. Itraconazole, fulconazole and terbinafine are administered orally.

5. **Candida granuloma**

It occurs in infancy and progresses slowly. The scalp, face and mucous membranes are commonly infected by *Candida albicans*, leading to multiple horn-like papules. The nail plates cloud and thicken. Multiple hyphae are found in the granuloma.

**b. Mucosal candidiasis**

1. **Oral candidiasis**

This is also known as thrush. A white pseudomembrane or white fur attaches to the oral mucosa and tongue, accompanied by inflammatory flush. Burning sensation and gustatory anesthesia are present. Erosive plaques form at the site where the pseudomembrane detaches, causing sharp pain. Newborns and immunocompromised children are most frequently affected. It heals spontaneously in 1 to 2 weeks. An underlying disease such as diabetes or immunodeficiency is often found in adult cases. Oral candidiasis also occurs as an early symptom of AIDS.
25 Fungal Diseases

Synonym: Genital candidiasis

Pregnant women and adult women with diabetes are frequently affected. There is erosive reddening, formation of white fur, and white vaginal discharge. In male cases, reddening and scaling occur on the corona of the glans penis and foreskin. Genital candidiasis may occur as a symptom of a sexually transmitted disease.

3. Chronic mucocutaneous candidiasis (CMCC)

Various types of candidiasis appear in childhood accompanying underlying disease such as immunodeficiency or endocrine abnormality, and progress slowly. Multiple skin lesions occur. Unlike other candidiases, chronic mucocutaneous candidiasis (CMCC) is characterized by thick crust that may become verrucous. CMCC responds well to treatment; however, recurrence often results when treatment is terminated. It is intractable.

C. Malassezia infections

1. Pityriasis versicolor

Synonym: Tinea versicolor

Outline

- It is a superficial infection caused by *Malassezia furfur*, a fungal yeast that is resident in more than 90% of adults.
- Light brown patches or hypopigmented macules 1 to 3 cm in diameter appear on the upper trunk of young men and women and may coalesce into larger macules.
- Scales exfoliate in large amounts from the eruption when scraped.
- For diagnosis, detection of hyphae and microscopic examination with KOH solution or Wood’s lamp (yellow-orange fluorescence) are important.

Clinical features

Pityriasis versicolor begins as light brown patches or hypopigmented macules of 5 mm to 20 mm in diameter, most frequently on the trunk, but sometimes on the upper arms and neck (Fig. 25.17). They gradually enlarge and coalesce, presenting larger macules. Pityriasis versicolor in which brown patches are produced is called pityriasis versicolor nigra; pityriasis versicolor in which hypopigmented macules occur is called pityriasis versicolor or alba. The patches tend to be asymptomatic, although there