

## **CHAPTER 6 FUNGAL INFECTIONS**

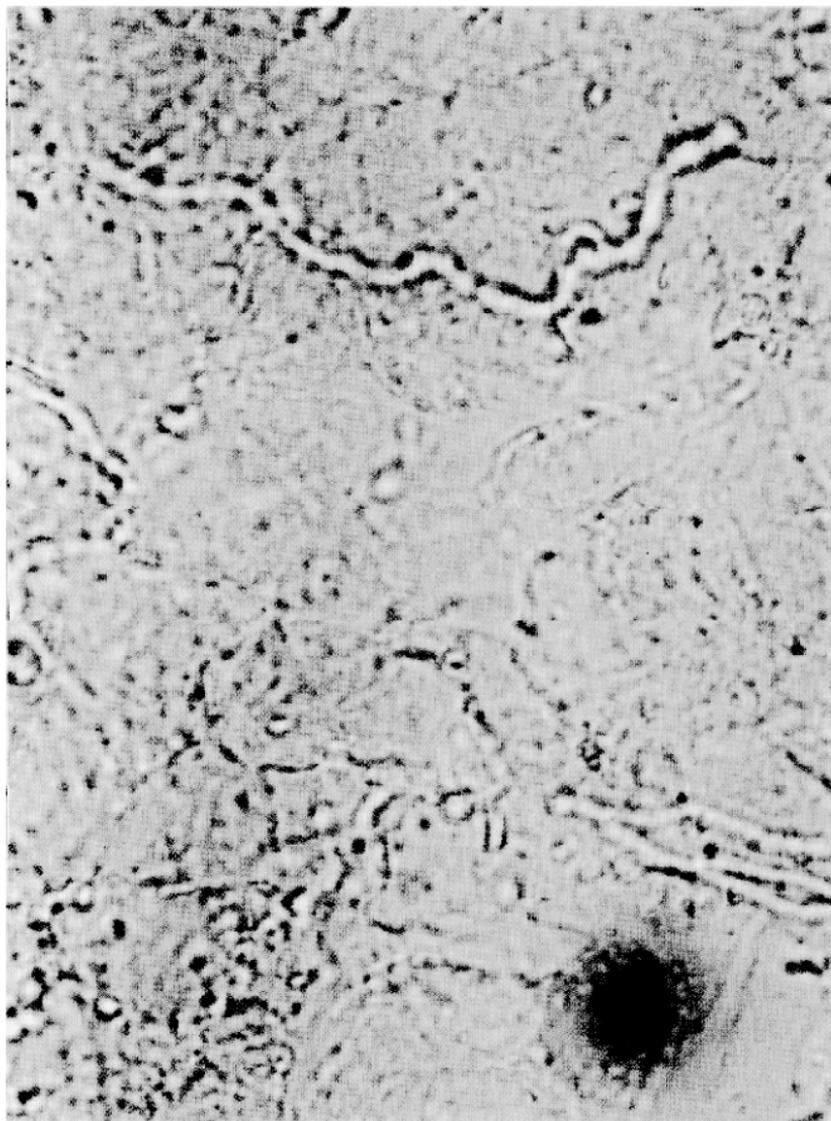
**(NATO STANAG 2122, CENTO  
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### **Fungi**

A fungus is a type of plant life without roots, stems, leaves, or the green pigment, chlorophyll. Mushrooms, bread molds, and leather mildews are examples of such plant life. Fungi eat dead or living organic matter. Although over 70,000 species exist in the world, only about 20 species live and produce disease on the skin.

Fungi can be seen, using a microscope, in scrapings of the dead skin taken from the edge of the infected area.

They can also be grown on a special fungal cultural media.



**Fungi in skin-scraping seen under microscope  
(typical thread like structures).**

Many terms are used in describing fungal infections:

**DERMATOPHYTOSIS**  
(der-ma-toe-fi-toe'-sis)

Dermatophytosis means fungal infection of the skin.

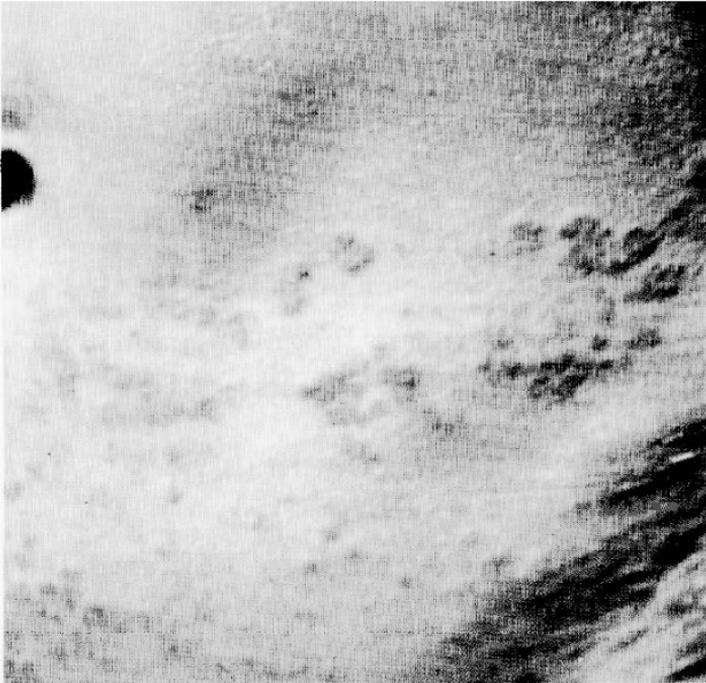
**TINEA PEDIS**  
(tin'-ee-ah pe'-diss)

Tinea pedis means fungal infection of the skin of the feet and/or hands.

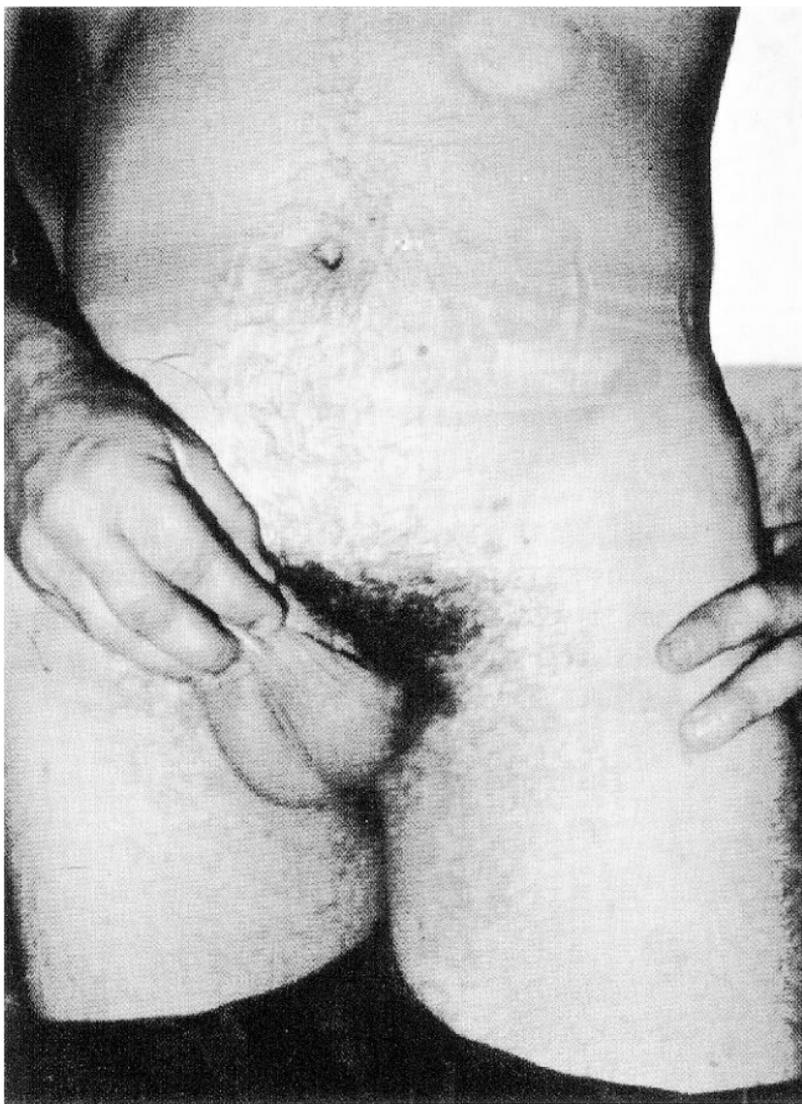
**TINEA CRURIS**  
(tin'-ee-ah kru'-ris)

Tinea cruris means fungal infection of the skin of the groin.

**TINEA CORPORIS**



**Fungal infection—Tinea Corporis (note localization  
in slow-drying belt area).**



**Extensive fungal infection—"tinea corporis"  
and "tinea cruris."**

The fungi, that attack the human skin, eat the dead horny layer (stratum corneum). Sometimes they move outward from the center in search of more food, forming ring-shaped lesions known as “ringworm.”



**Typical ringworm (many fungal infections do not take this ring-form).**

## Symptoms

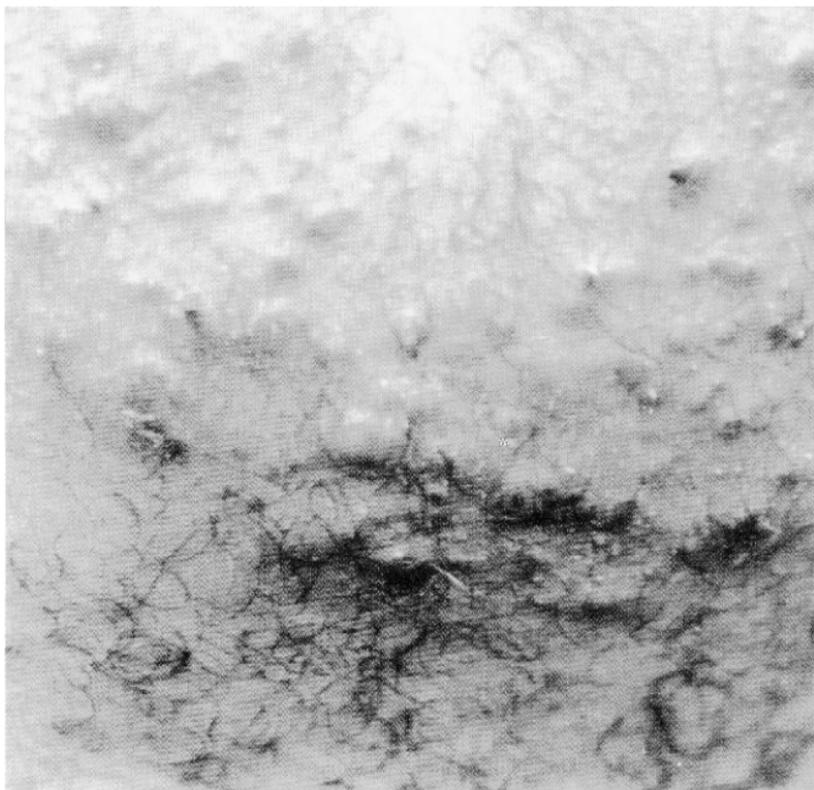
In the tropics, fungal infections on the body usually begin as small, reddish, scaling macules around the ankles, on top of the feet, on the buttocks, or in the groin. Within a few days they become papular and more scaling on the advancing edge. Tiny vesicles appear. Itching is usually mild at first but becomes worse, particularly in the groin. As the inflammation increases, the itching often awakens the patient. The center of the lesion may be less red than the edges, producing the "ringworm." The papules enlarge and often grow together producing large areas of dermatitis. The entire groin, buttocks, and legs may be involved.

With an acute and rapid onset, groups of tiny vesicles or pustules appear and the itching becomes severe.



Figure 1. A close-up view of the fabric used in the study.

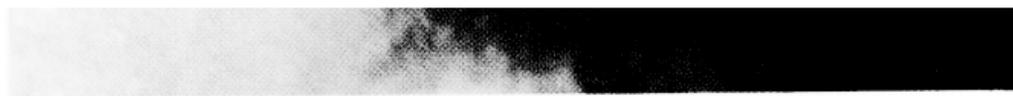
The patient scratches off the tops of the pustules; then bacteria invade and cause a secondary infection. Crusts and cellulitis may result. On hairy areas, the fungi may grow into the hair follicles creating pustules, small boils, or inflamed follicles.



**Fungal infection of hair follicles  
of hairy lower abdomen.**

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Severe, deep fungal infection of hair  
follicles on upper lip



An extensive or very inflamed fungal infection may incapacitate and make the patient quite miserable for several weeks. General health will be unharmed and full recovery can be expected.

## **Diagnosis**

In tropical areas, looking at skin lesions will not give any clue concerning which fungus is causing the infection. But, locating typical fungal lesions on the patient's buttocks, ankles, or groin is often helpful in diagnosing a puzzling patch of scales or vesicles on the face.



**Two patches of fungal infection of face**

## Treatment of Fungal Skin Infections

### TOPICAL TREATMENT

Use antifungal cream. This cream is also *antipruritic* (*an-te pru-rit'-ik*) and anti-inflammatory.

#### *Explain to the patient*

Rub in antifungal cream.

Rub it in two or three times a day or whenever itching occurs.

Itching will be greatly reduced in 3 days; in the groin, it may take 4 days. The redness will fade in 3 days; in the groin it may take 5 days. The infected skin will look well, except for some brownish or dark spots, in 10 to 14 days. If the infected skin is quite scaly, there may be some harmless, yellow staining of the skin.

## **Some Fungi That Produce Disease**

Three common fungi produce skin infections.

### **TRICHOPHYTON MENTAGROPHYTES** (tri-kof'-i-ton men-tag-grof-fi'-tees)

Trichophyton mentagrophytes usually produces a form of “athlete’s foot” with patches of blisters on the toes, soles, or top of the feet. In wet tropical climates, it may cover the top of the foot, the ankle and the lower half of the leg, the groin, the buttocks, the face, the arms, and other areas.

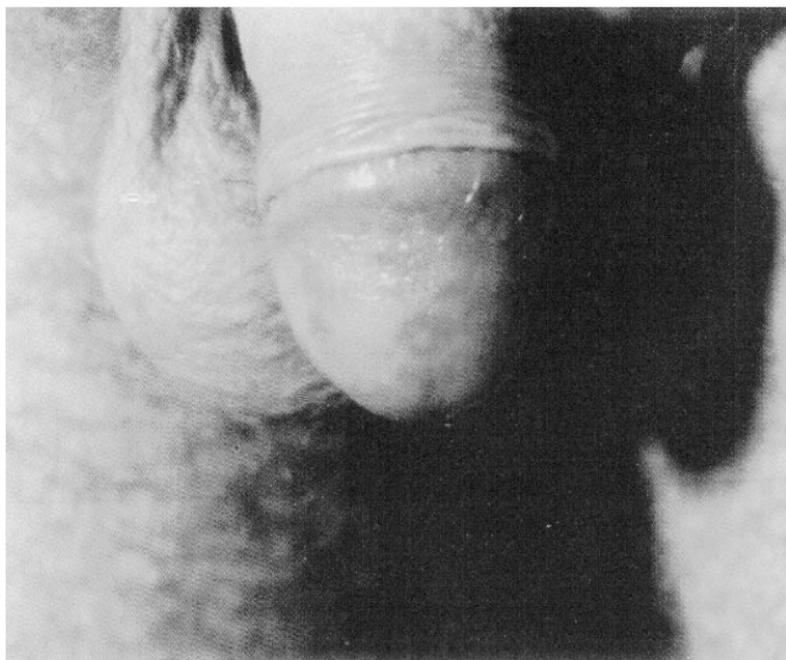
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Typical fungal infection



**Typical fungal infection.**





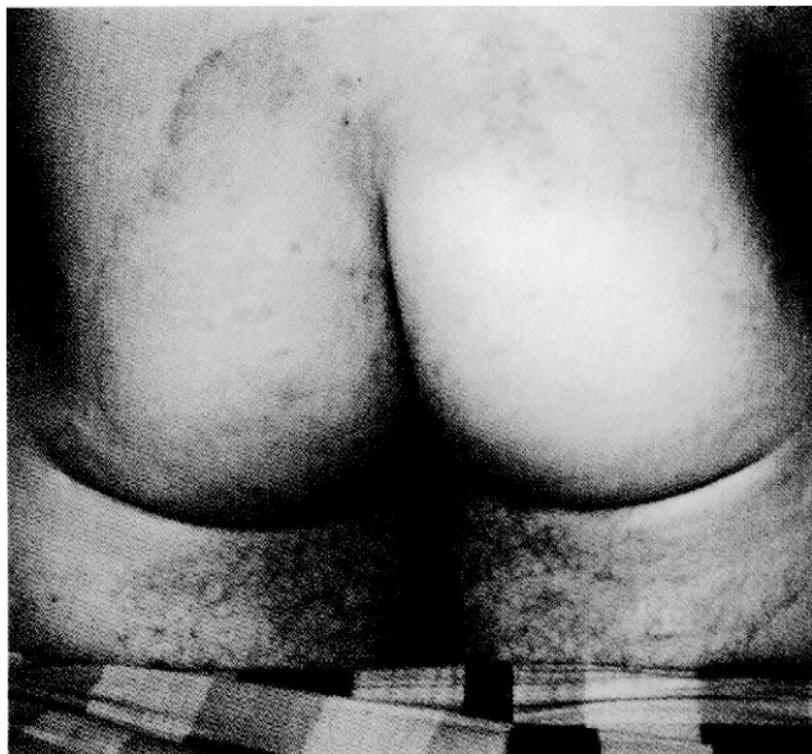
**Fungal infection of head of penis by trichophyton mentagrophytes seen in the wet tropics but not in the United States. (Infections of head of penis are usually caused by candida albicans).**

**TRICHOPHYTON RUBRUM**  
(tri-kof'-i-ton ru'-brum)

Trichophyton rubrum is the most common cause of “athlete’s foot” in the United States, causing dull-red scaling of the soles and occasionally, cracks between the toes.



Dull-red, scaling—typical of *trichophyton rubrum* infections.



**Typical extensive trichophyton rubrum infection.**

**CANDIDA ALBICANS**  
(can'-di-dah al'-bi-cans)

Candida albicans is a yeast that produces an inflamed patch with tiny pustules around the edges.

It infects any moist, warm area where skin rubs against skin such as the groin, the armpits (axillae), and the penis, under the foreskin (prepuce).

These infections by candida albicans are called "*candidiasis*" (can-di-dei'-a-s is) or "*moniliasis*" (men i-lie'-a-sis).

