

“Cutaneous & Subcutaneous Mycoses”



Introduction to Medical Mycoses

Medical mycoses are classified into four major categories based on depth of tissue involvement:

Medical Mycoses →

→ Cutaneous

- Superficial skin, hair, nails

→ Subcutaneous

- Subcutaneous tissue (subcutis)

→ Systemic

- Internal organs (lungs → dissemination)

→ Opportunistic

- Occur mainly in immunocompromised hosts

🔑 Key Points

- This section covers cutaneous mycoses in detail
- Subcutaneous mycoses will be discussed in Part 2
- Systemic & opportunistic mycoses are covered separately

🌟 Overview: Important Fungal Diseases (At a Glance)

Cutaneous Mycoses

Anatomic Level	Representative Disease	Causative Genus	Seriousness
Dead keratin layer	Tinea versicolor 	<i>Malassezia</i>	1+
Epidermis, hair, nails	Dermatophytosis (Tinea)	<i>Microsporum</i> , <i>Trichophyton</i> , <i>Epidermophyton</i>	2+

Seriousness Scale (Exam-Friendly)

- 1+ → Not serious, treatment optional 
- 2+ → Moderately serious, treatment required 

- 4+ → Life-threatening, urgent treatment 

CUTANEOUS MYCOSES



Dermatophytoses (Tinea / Ringworm)



Dermatophytoses are chronic fungal infections caused by dermatophytes that infect only keratinized tissues:

- Skin
- Hair
- Nails

 They do NOT invade living tissue (important exam point).



Causative Genera (Mnemonic: TEM)

Genus	Key Feature
Trichophyton	Skin, hair, nails
Epidermophyton	Skin & nails (NO hair)
Microsporum	Skin & hair (often zoonotic)



- Direct contact with infected humans
- Microsporum → often transmitted from animals



Clinical Features

- Chronic infection in warm, humid areas
- Common sites: feet, groin, scalp
- Lesion morphology:
 - Annular (ring-shaped)
 - Raised, inflamed margins
 - Central clearing
- Usually pruritic (itchy)

👉 Nail Involvement

- Thickened
- Brittle
- Discolored

➡ Tinea unguium (Onychomycosis)

💡 Body-Based Naming of Tinea (VERY High Yield)

Site	Name
Scalp	Tinea capitis 
Body	Tinea corporis
Groin	Tinea cruris
Foot	Tinea pedis 

ｂowl Important Species & Special Presentations

Species	Disease	Exam Note
<i>Trichophyton tonsurans</i>	Tinea capitis (children )	Endothrix infection

<i>Trichophyton rubrum</i>	Common tinea	Chronic
<i>Trichophyton schoenleinii</i>	Favus	Scalp crusts
<i>Trichophyton spp.</i>	Kerion	Inflammatory pustular lesion

⚠ Hypersensitivity Reaction

Dermatophytid ("Id") Reaction

- Vesicles on fingers
- Due to circulating fungal antigens
- No fungal elements present (key differentiator)



Laboratory Diagnosis

Microscopy

- Skin / nail scrapings
- 10% KOH preparation
- Shows septate hyphae

2 Culture

- Sabouraud dextrose agar
- Room temperature
- Species identification via conidia

3 Special Test

- Wood's lamp 
- Microsporum → green fluorescence 

Treatment of Dermatophytoses

Topical Antifungals

- Terbinafine
- Undecylenic acid
- Miconazole
- Tolnaftate

Oral Antifungals

- Griseofulvin
- Itraconazole

Nail Infection

- Efinaconazole solution (onychomycosis)

🛡️ Prevention

- Keep skin dry & cool  
- Treat infected animals  
- Avoid sharing towels/shoes

🔄 Quick Recall Flowchart - Dermatophytoses

Dermatophyte Infection  →

→ Skin  → Tinea corporis / pedis / cruris

→ Hair  → Tinea capitis → Endothrix → inside hair shaft → Favus → crusts (*T. schoenleinii*)

→ Nails  → Tinea unguium

→ Hypersensitivity  → Dermatophytid ("id") reaction



Tinea Versicolor (Pityriasis Versicolor)

 Causative Agent

- Malassezia species

 Clinical Features

- Superficial, cosmetic infection 
- Hypopigmented patches on tanned skin 
- Fine scaling, mild itching or asymptomatic
- More common in hot, humid climates 

 Diagnosis

- KOH prep:
 - Budding yeast + hyphae
- Culture usually not required

 Treatment

- Topical miconazole 
- Recurrent cases → oral fluconazole / itraconazole

 Tinea Nigra Causative Agent

- *Cladosporium werneckii*

 Clinical Features

- Brown to black macule 
- Due to melanin-like pigment in hyphae
- Transmitted via minor trauma
- Endemic in southern USA

 Diagnosis

- Skin scraping → microscopy + culture

 Treatment

- Topical keratolytic agents (e.g., salicylic acid)

⚡ Exam Pearls

- Keratin only → Dermatophytes
- Wood's lamp positive → Microsporum
- Hypopigmented patches in summer → Tinea versicolor

SUBCUTANEOUS MYCOSES



🦠 Introduction

Subcutaneous mycoses are caused by soil or vegetation fungi that enter subcutaneous tissue via trauma (e.g., thorns, splinters, cuts) 🌾 🤲.

- Usually chronic, localized infections
- Rarely systemic
- Often seen in farmers, gardeners, and those in tropical climates



Quick Flowchart - Clinical Manifestations

Subcutaneous Mycoses  →

- Sporotrichosis  → Nodular lymphangitis along draining lymphatics
- Chromomycosis  → Wartlike, crusted lesions along lymphatics
- Mycetoma  → Abscesses with sinus tracts containing granules



Sporotrichosis (Rose-Gardener's Disease)



Causative Organism

- *Sporothrix schenckii* (dimorphic)
 - Mold in environment 
 - Yeast in human tissue 



Transmission

- Traumatic inoculation (rose thorn, wood splinter)

 Clinical Features

- Local pustule or ulcer at trauma site
- Nodules along draining lymphatics (nodular lymphangitis)
- Usually painless, minimal systemic symptoms
- Chronic course: waxing and waning for years 
- Immunocompromised patients → disseminated disease

 Laboratory Diagnosis

- Tissue: Cigar-shaped budding yeasts
- Culture at 20–25°C: Hyphae with daisy-like oval conidia 

 Treatment

- Itraconazole (Sporanox)

 Prevention

- Wear protective gloves and clothing when handling plants or wood 

● Chromomycosis (Chromoblastomycosis)

Causative Organisms

- Dematiaceous (dark) fungi: *Fonsecaea*, *Phialophora*, *Cladosporium*

Transmission

- Traumatic inoculation into subcutaneous tissue

Clinical Features

- Slowly progressive granulomatous infection
- Wartlike, crusted lesions along lymphatics
- Often affects bare feet or legs 
- Predominantly tropical regions

Laboratory Diagnosis

- Dark brown, round fungal cells in leukocytes or giant cells

Treatment

- Oral Flucytosine or Thiabendazole
- Local surgical excision may be required



Mycetoma (Madura Foot)



Causative Organisms

- Fungal → *Petriellidium*, *Madurella*
- Actinomycotic → *Nocardia*



Transmission

- Entry through wounds on feet, hands, or back



Clinical Features

- Chronic abscesses with pus
- Sinus tracts draining colored granules



Laboratory Diagnosis

- Fungal → Granules in pus
- Actinomycotic → Similar appearance; differentiate via culture



Treatment

- Actinomycotic → Sulfonamides

- Fungal → No effective drug; surgical excision recommended



Quick Recall Flowchart - Subcutaneous Mycoses

Subcutaneous Fungal Infection  →

→ Sporotrichosis 

- Pustule/ulcer → Nodules along lymphatics →

Itraconazole 

→ Chromomycosis 

- Wartlike crusted lesions → Granulomatous →

Flucytosine / Thiabendazole + Surgery 

→ Mycetoma 

- Abscesses with sinus tracts → Colored granules
- Fungal → Surgery
- Actinomycotic → Sulfonamides



Summary Table: Skin & Subcutaneous Fungal Diseases

Genus	Forms in Tissue	Microscopy	Transmission	Key Clinical Findings	Lab Diagnosis
Trichophyton / Epidermophyton	Hyphae	Septate	Human → Human 	Tinea capitis, tinea pedis, ring of inflammatory vesicles	KOH prep; Sabouraud's agar
Microsporum	Hyphae	Septate	Human ↔ Animal 	Tinea capitis, tinea pedis; ring lesions	KOH prep; Sabouraud's agar; Wood's lamp 
Malassezia	Hyphae + Yeasts 	Mixture of hyphae & yeasts	Human → Human 	Scaly, hypopigmented plaques on trunk; usually nonpruritic	KOH prep
Sporothrix	Yeasts	Cigar-shaped yeasts	Trauma (rose thorn) 	Pustule/ulcer on hands  ; nodules on arms 	KOH prep; culture at 20°C → hyphae with daisy-like conidia 

⚡ Exam Pearls

- Sporotrichosis → Rose thorn injury → nodular lymphangitis
- Chromomycosis → Tropical wartlike lesions → dark fungal cells
- Mycetoma → Sinus tracts with colored granules → fungal vs actinomycotic