SUPERFICIAL MYCOSES

The superficial mycoses are usually confined to the outermost layer of skin, hair and do not invade living tissues.
SUPERFICIAL MYCOSES

I. Pityriasis versicolor
II. Tinea nigra
III. Black piedra
IV. White piedra
V. Keratomycosis

I. PITYRIASIS VERSICOLOR
(TINEA VERSICOLOR)
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(Tinea versicolor)

• Superficial chronic infection of Stratum corneum

• **Etiological agent:** *Malassezia furfur* (Lipophilic yeast)

• **Clinical findings:** Hyperpigmented or depigmented maculae on chest, back, arms, abdomen which may itch.

  - Characterized by a blotchy discoloration of skin which may itch.
  - Up to 25% of the general population may have this lesion at any one time.

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**Epidemiology**

• *Malassezia* species are common members of the normal skin flora and most infections are thought to be endogenous

• The incidence of skin colonization rises from around 25% in children to almost 100% in adolescents and adults. Disease is probably related to host and environmental factors.

• It is very common in hot, humid tropical climates, where 30–40% of adults may be affected.
The most common form of the disease seen in Caucasians showing typical hyperpigmented lesions on the trunk.
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Typical depigmented lesions seen in dark-skinned individuals, for example in Australian Aborigines.
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Depigmented lesions on the face of a young Aboriginal girl.

Pityriasis versicolor of the face is a rare clinical presentation.

Depigmented lesions on the face of a young Caucasian boy respectively. Pityriasis versicolor of the face is a rare clinical presentation.
**Follicular pityriasis versicolor.**
Lesions are visible around the hair follicles and sebaceous glands. This is a more severe form of the disease.

![Image of affected skin]

**Diagnosis**

Rapid and easy way to confirm the diagnosis of tinea versicolor is by using a Wood's lamp. Yellow to yellow-green fluorescence is characteristic of fine scales taken from active lesions. Although the sensitivity of this procedure is reduced when patients have taken a recent shower.

**Wood's lamp:** longwave UV light used in dark room will cause Tinea microbes to fluoresce. This image is of an affected scalp.

![Images of Wood's lamp and fluorescence]
Tinea versicolor

**Diagnosis:**
- Wood’s light
  - yellowish or brownish
  - extent of involvement or the achievement of a cure
- KOH
  - short, thick fungal hyphae and large numbers of variously sized spores
  - “spaghetti and meatballs”

**Laboratory diagnosis**
- Diagnosis is also usually possible by direct microscopic examination of KOH-treated skin scrapings which show a typical aspect of mycelia and spores described as "spaghetti and meatballs."(round yeast cells (5–8 μm in diameter) with short hyphae, which may be curved and occasionally branched)
- These organisms require lipids for growth and special media containing Tween and lipid supplements have been developed.
- *Malassezia* occurs as an oval or bottle shaped yeast, which characteristically produces buds on a broad base. In *pityriasis versicolor* the organism produces predominantly round yeast cells and short hyphae.
Culture of *Malassezia furfur* on Dixon's agar (contains glycerol mono-oleate)

Microscopy shows clusters of round yeasts with filaments by KOH mount of scraping
Colonies of *Malassezia furfur* on *Dixon's agar.* A specialized isolation medium containing glycerol-monooleate.

Colony appearance of *Malassezia furfur* (right) and *Malassezia sympodialis* (left) on modified *Dixon* agar containing L-tryptophan as a single source of nitrogen. Specific brownish pigment diffusion into the medium is observed only in colony of *M. furfur.*
PITYRIASIS VERSICOLOR

Treatm.: Topical 2% selenium sulfide or azoles such as ketoconazole in cream, lotion or a shampoo.

Oral ketoconazole
Oral itraconazole
Seborrheic Dermatitis

• More common than psoriasis
• Regions with a high density of sebaceous glands, (scalp, forehead (especially the glabella), external auditory canal, retroauricular area, nasolabial folds & beard skin)
  – Not a disease of the sebaceous glands
  – Macules and papules with extensive scaling and crusting
  – Fissures behind the ears
  – Dandruff is the common
• Infants - presents as cradle cap
  – also be part of Leiner disease (with diarrhoea and failure to thrive)

It is more often seen in AIDS, CHF, Parkinson disease, and in immunocompromised premature infants.

Seborrheic Dermatitis

• Features
  – Both spongiotic dermatitis and psoriasis
  – Parakeratosis containing neutrophils and serum are present at the ostia of hair follicles (so-called follicular lipping)
  – HIV-apoptotic keratinocytes and plasma cells
• Etiology: Three Factors are Required
  – Yeast fungus - Malassezia furfur
  – Sebum
  – Susceptible individuals
Range of visible flakes along dandruff (altered stratum corneum) /Seborrheic dermatitis disease spectrum. ASFS=20, mild dandruff; (b) ASFS=30, moderate dandruff/Seborrheic dermatitis; (c) ASFS=42, severe dandruff/Seborrheic dermatitis. (ASFS = adherent scalp flaking scale)

II. TINEA NIGRA
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- Tinea nigra is a superficial fungal infection of skin characterized by brown to black macules,
- Superficial chronic infection of Stratum corneum
- which usually occur on the palmar aspects of hands and occasionally other surfaces of the skin (palms, fingers, face).
- Lesions are non-inflammatory and non-scaling.
- Frequent in tropical areas

Etiological Agent: *Exophiala werneckii* a common saprophytic fungus believed to occur in soil, compost, humus and on wood in humid tropical and sub-tropical regions. Familial spread of infection reported.
Typical brown to black, non-scaling macules on the palmar aspect of the hands. Note there is no inflammatory reaction.

Tinea nigra plantaris of three years duration in a 50 year old man from South America. Note the typical darkly-pigmented, non-scaling macules.
Skin scrapings mounted in 10% KOH showing pigmented brown to dark olivaceous (dematiaceous) septate hyphal elements and 2-celled yeast cells producing annelloconidia typical of *Exophiala werneckii*.

*Exophiala werneckii* on Sabouraud's dextrose agar. Initially colonies are mucoid, yeast-like and shiny black. However with age they develop abundant aerial mycelia and become dark olivaceous in colour.
Microscopic morphology of *Exophiala werneckii* showing the typical 2-celled, pale brown yeast cells, with prominent darkly-pigmented septa, which act as annellides. Annellides may also arise from the hyphae. Anelloconidia are 1 to 2-celled, cylindrical to spindle-shaped, hyaline to pale brown and usually occur in aggregated masses.

**TINEA NIGRA**

- **Treatm.:** Topical salicylic acid, tincture of iodine (alcoholic I₂)
III. BLACK PIEDRA

- Fungal infection of the scalp hair
- Etio: Piedraia hortae
- Frequent in tropical areas
- Clinical findings: hard, dark brown to black nodules on the hair
Black Piedra: hard, difficult to remove, black.

The nodule is the ascomycete fruiting body of the fungus, known as an ascostroma.

(a) 10% potassium hydroxide (KOH) examination of black colored nodule shows a concretion forming a collar around hair shaft. Concretion was made up of filamentous hyphae, held together in a mass by cement like substance. Spores are seen at the edges of the nodule (→).

(b) KOH mount of crushed nodule shows brown dematiaceous closely septate hyphae (H) with few chlamydospores (Ch).

(c) Culture on Sabouraud's dextrose agar shows small, compact, blackish colonies with velvety surface.

(d) Microscopic examination of the colonies showed round, dark brown, globus ascus (→) with ascospores.
BLACK PIEDRA

• Culture: Brown to black colonies

• Treatm.: Topical salicylic acid, azol creams

IV. WHITE PIEDRA
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• Fungal infection of facial, axillary or genital hair

• Etio: *Trichosporon* (yeast)

• It is a yeast causing **white piedra** and also the cause of a more serious severe opportunistic infection (**trichosporonosis**) in immunocompromised individuals (a member of the normal flora of mouth, skin and nails).
These nodules are a loose aggregate of hyphae and arthroconidia

White Piedra: soft spongy nodes all along hair shaft

Direct mycological exam exhibiting a yellowish nodule around a hair shaft, formed by hyphae and arthrospores

Culture in Sabouraud's agar - yeast-like colony, cream colored, wrinkled and with a wax-like appearance

KOH mount of affected hair showing a cluster of blastoconidia around the hair

Sabouraud's agar showing growth of soft cream coloured wrinkled colonies of *T. beigellii*
Micromorphology of the colony – presence of blastospores and hyaline arthrospores of *Trichosporon* spp

Lactophenol cotton blue mount of the isolate revealing pleomorphic yeast cells and septate hyphae fragmenting to form rectangular arthrospores and blastoconidia

### WHITE PIEDRA

- **Clinical findings:** Soft, white to yellowish nodules loosely attached to the hair
- **Micr.:** Intertwined septate hyphae, blasto- and arthroconidia
- **Culture:** Soft, creamy colonies
- **Treatm.:** Shaving, azoles
A **fungal keratitis** is an 'inflammation of the eye's cornea' (called *keratitis*) that results from infection by a fungal organism. **Keratomycosis** is the Latin terminology equivalent of fungal keratitis - it is the fungal infection of the cornea, the anterior part of the eye which covers the pupil.
KERATOMYCOSIS
(=Mycotic keratitis)

• Posttraumatic / postsurgical corneal inf.
• Etio: Saprophytic fungi (Aspergillus, Fusarium, Alternaria, Candida), Histoplasma capsulatum
• Clinical findings: Corneal ulcer

• 2006 outbreak associated with Fusarium - a mold growing in contact lens solution held for long periods
• Anamorph shows sporulation
• Characteristic of Fusarium
KERATOMYCOSIS

• **Micr.:** Hyphae in corneal scrapings

• **Treatm.:** Surgery (keratoplasty)
  - Natamycin
  - Nystatin
  - Amphotericin B