Ass lec. Jihad N. Abid

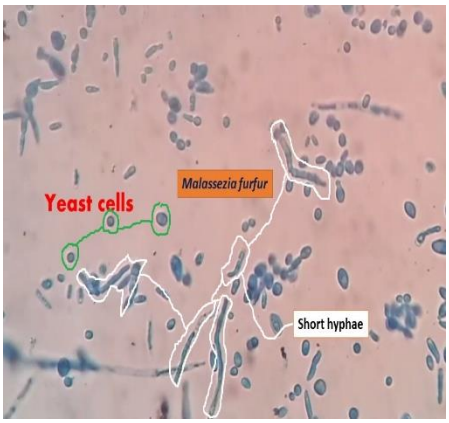
1. Superficial mycoses

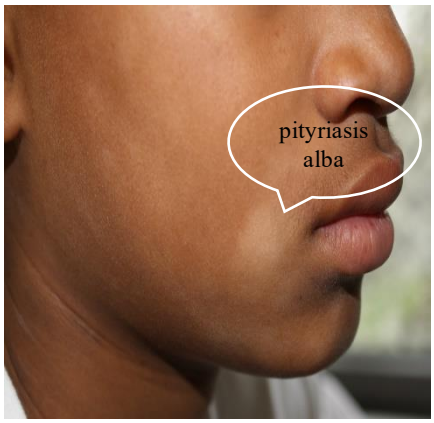
- Superficial mycoses are limited to outermost layer of skin or hair with little tissues damage and generally no inflammatory response.
- They infect only superficial keratinized tissue (dead layer) without invasion of living tissue and without apparently provoking immune response of host.
- **Three diseases** are main superficial fungal infections:

1- Tinea versicolor (pityriasis versicolor, pityriasis alba):

Etiological agent:

- *Malassezia* species, especially species, ***M. furfur*** and ***M. globosa*** are most responsible for tinea versicolor.
- It is **dimorphic** fungus.
- The **mold** form has branched and septate hyphae with spores. The **yeast** form has single cells with buds. The spores (conidia) are infective stages.





Source and transmission:

- The fungus is part of skin normal flora and cause endogenous infection.
- It can be transmitted from person to another by direct contact through any break in skin when contaminated with fungus spores.

Pathogenesis:

- *Malassezia* species are a lipophilic yeast, it requires lipid for its growth, and infect the stratum corneum (cornified is keratinized layer) of skin.
- Pityriasis versicolor is not associated with host immune response, and no virulence factors are known.

Clinical findings:

- The organism is responsible to cause tinea versicolor, atopic eczema, seborrheic dermatitis, dandruff.
- The tinea versicolor lesion is noticed as **hypopigmented** areas, especially on tanned skin.
- The tinea is characterized by dry, scaling (exfoliative skin), itching, depigmented maculae occur on skin, usually of chest, neck, upper back, arms, and abdomen.

Epidemiology:

- The tinea is common infection with worldwide distribution.
- It occurs more frequently in hot and humid weather, usually more occur in summer months.
- It is more common in an immunocompromised patient.

Lab. Dx:

- Direct microscopic examination of scaly lesion: scrapings of infected skin treated with **10% KOH** or stained with calcofluor white stain, will be reveals as yeast or as septate hyphae.
- Cultivation is **not** usually done (no cultured so far).

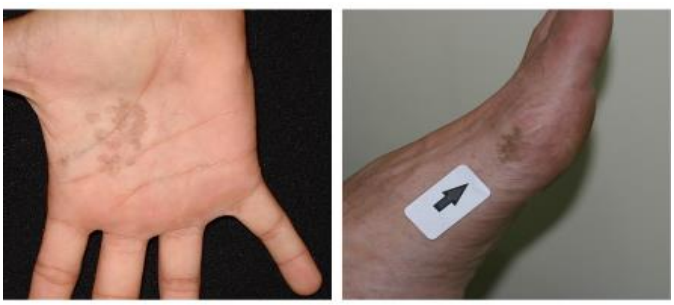
Treatment and prevention:

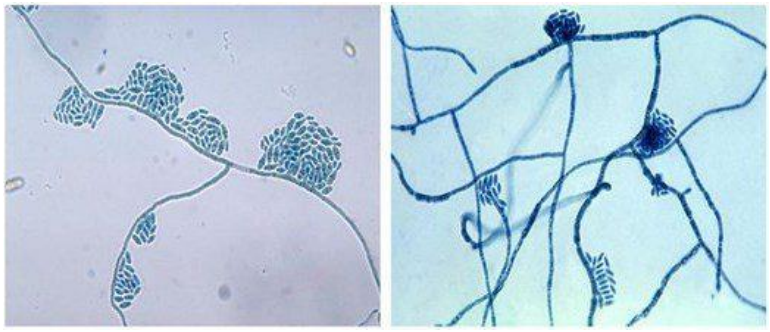
- The skin lesion is treated topically with selenium sulfide or with topical or oral miconazole.
- Removing infected stratum corneum mechanically or chemically.

2. Tinea nigra:

Etiology:

- The tinea nigra disease is caused by *Hortaea werneckii*.
- The fungus is **dimorphic.**
- The mold form has branched and septate hyphae with spores. The yeast form has budding cells.





Source and transmission:

- Fungus is found in soil.
- It is transmitted to human via skin injury contaminated with fungus spores.

Pathogenesis:

- Tinea nigra is infection of keratinized layer of skin (stratum corneum).
- Tinea nigra does not elicit host immune response.
- Virulence factors are unknown except melanin pigment, (so it called **dematiaceous fungus**).

Clinical findings:

- The lesion caused by the yeast form (not mold) which appears as brown to black spot on the skin.
- These macular areas appear most common on palms and soles.
- The lesion is characterized by flat spot, dark discoloration, and non-scaly macula.

Epidemiology:

• Tinea nigra is more prevalent in warm coastal regions and among young women.

Lab.Dx:

- Direct microscopic examination of scrapings in 10% KOH preparation will reveals as mold with branched and septate hyphae, or reveals as budding yeast cells with melaninized cell walls.
- Culture of skin scrapings is done at 25°C and at 37°C. The culture reveals black colonies with pigmented cells.

Treatment and prevention:

- Infection is treated with topical keratolytic solutions such as salicylic acid, or azole antifungal drugs.
- Good hygiene and wearing shoes are important preventive measure.

3. Tinea Piedra (White piedra and black piedra):

Etiology:

- White piedra is caused by mold *Trichosporon ashii.*
- Black piedra is caused by mold *Piedraia hortae.*

Source and Transmission:

- Humans are natural host. They are found on hairs of human.
- Both fungal pathogens are transmitted from person to person by infected hairs on shared combs or hairbrushes.
- **The spores** are infective stages.

Pathogenesis:

- No virulence factors are known.
- They grow around hair shaft.

Clinical pictures:

- White piedra is a nodular infection of hair shaft (scalp, axillary, beard, pubic hairs), and it is characterized by soft, white to light brown nodules which are formed around hair shaft.
- Black piedra is nodular infection of scalp hairs, and characterized by hard, brown to black nodules attached to hair shaft.

Epidemiology:

- Both infections are more common in young adults.

Lab.Dx:

- Direct microscopic examination of hairs in KOH preparation reveals dark pigmented nodules containing dark septa hyphae (black piedra), or white to brown septa hyphae (white piedra) on hair shaft.
- Culture on Sabouraud agar at 25 °C for 3 weeks there appears shiny colonies which are cream colored and wrinkled surface.

Treatment and prevention:

- Piedra is treated by removal of infected hairs by shaving the hairs.
- Application of topical antifungal agents.
- Good personal hygiene is very important in prevent the infections.