Malassezia Infections

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Malassezia Infections

Alternate Names:
- Pityrosporum
  - Obsolete name for this genus
- Yeast Infections

Malassezia Taxonomy

- Kingdom: Fungi
- Phylum: Basidiomycota
- Class: Hymenomycetes
  - Order: Tremellales
  - Family: Filobasidiaceae
- Genus: Malassezia

Malassezia

- A colonizing yeast found on dermis and other body surfaces of humans and animals
- Most species require long fatty-acid chains to grow well (lipophilic)-except M. pachydermatis
- Normal skin flora- colonies found on up to 90% of adults (www.doctorfungus.com)
- Cells are globose to ellipsoidal in shape
- Conidia (asexual spore off hyphae branch) is primary form

Malassezia Infections

Malassezia Infections

Etiologic Agent and Taxonomy (11 species):
- Malassezia furfur-most common
- Malassezia globosa
- Malassezia obtusa-rarely recovered
- Malassezia restricta
- Malassezia slofiae
- Malassezia symphodialis
- Malassezia pachydermatis
- Malassezia dermatis
- Malassezia japonica
- Malassezia nana
- Malassezia yamatoensis

Malassezia Geographical Distribution

- More common in adults
- More common in tropical areas with up to a 40-60% infection rate (Clinical Mycology)
- Japan- M. symphodialis, M. furfur
- Spain- M. symphodialis, M. globosa
- M. globosa- commonly seen in the scalps of UK residents
- M. furfur- tropical areas
Malassezia Life Cycle

- No telomere phase
- Yeast cells and hyphae
- Found as colony on skin in budding forms
- Raised and smooth in cultures
- Get dry and wrinkled as they age
- During an infection change to mycelial form
- In temperate regions clusters of hyphae suggesting form differs depending of location

Malassezia Life Cycle

- Asexually reproduction only
- Collarettes
- Usually single buds
- Mature in about 5 days in 30-37 degree climate
- Vary in color from creamy yellow to brown or orange-beige

Epidemiology

- Patients who are affected by immuno-suppressant conditions such as AIDS are at a higher risk of contracting an infection
- Adults carry more Malassezia than children
- An increase in Malassezia is found on teenagers because the increased activity in sebaceous glands provides nutrition for the lipophilic yeast

Epidemiology

- People receiving antibiotics or steroid treatment are more susceptible
- Higher risk in pregnant women and diabetics
- Common in tropics
- Relapses may occur with anti-dandruff or anti-fungal drugs
- Neonatal who are on parenteral nourishment with lipids

Pathogenesis: Pityriasis versicolor

- Occurs in healthy and immune compromised people
- Very common fungal disease that stays a very long time on skin
- M. globosa & M. sympodialis
- Budding yeasts
- Occurs in hot, humid climates

Pathogenesis: Pityriasis Versicolor

- Occurs in healthy and immuno-compromised patients
- Also known as Tinea Versicolor
- Caused by the excessive growth of Pityrosporum orbiculare (Malassezia furfur). Also caused by M. globosa and M. sympodialis
- Profuse perspiration and an abundance of oil produced in skin allows fungi to grow
- Appears as discolored flaky patches on the skin
- The color of the patches will change with sun exposure
- Treatment with dandruff medications or anti-fungals
- Commonly affected areas: chest, back, upper arm, neck
- Skin pigmentation changes may last after fungus is treated
Pathogenesis: Pityriases Folliculitis
- Localized papules, pimple, and pustules often show up after sun exposure
- Hair follicles become infected and inflamed by the fungi Pityrosporum orbiculare (more severe condition of pityriasis versicolor)
- Common in hot, humid tropical climates where UV rays are stronger
- Heat & friction irritates follicles

Pathogenesis: Seborrhoeic Dermatitis
- More commonly known as dandruff
- M. Yamatoensis
- Inflammatory skin conditions
- Known as cradle cap when appears in infants
- White-yellowish scales appear on or near oily areas of skin
- This condition can run in families and appear more commonly in patients with neurological conditions and immune compromised

Pathogenesis: Catheter-Related Fungemia in Neonates
- Opportunistic systematic infection
- Infection in newborns
- Presence of venous catheters
- Prolonged hospitalization
- Most common in patients receiving lipid replacement therapy (helps increase weight)

Pathogenesis: Atopic Dermatitis
- M. globosa and M. restricta cause the condition
- Stays inflammed for a long period of time
- May be blisters or red irritated skin that crusts over
- Sometimes ear discharge or bleeding may occur
- According to the American Society for Microbiology, patients with atopic dermatitis produce Malassezia specific immunoglobulin E (IgE) whereas healthy patients do not
- Furthermore anti-fungals can improve symptoms of atopic dermatitis

Pathogenesis: Acne Vulgaris
- More commonly known as acne
- Whiteheads, blackheads, pimples, pustules
- When follicles in skin become clogged
- Swelling and inflammation

Pathogenesis: Dacrocystitis
- Inflammation of the lacrimal sac in the inner ear
- Redness and discharge

Pathogenesis: Seborrhoeic Blepharitis
- Chronic inflammation of the eyelid
- Burning, sensitivity, irritation, blurred vision

Pathogenesis: Psoriasis
- Age 15-35
- Skin infection and irritation
- Have red skin with yellow flaky scales
- Severe in people with weak immune system
- Some types genetic, some caused from fungus
Case Study: Findings and Factors

- **Most commonly affected ages:** 10-20 (33.6% = 39/116)
- Resulting from greater development of sebaceous gland, which produce more sebum (oil)
- Found higher frequency in males in this study (others have showed no predominance in genders)
- Race and occupation had little to no relevance
- Factors involved: genetic inheritance, elevated temperatures, humidity, use of oils/moisturizers, immunosuppression, and chemical composition of sebum.

Case Study: Treatment

- Most commonly and effective were combination of topical and oral medications
- Including keratolytic and azolic antifungal agents
- Recurrence are frequent
- Can become chronic without treatment

References


Pathogenesis

- **Onchomyces**
  - Nail infection
  - Athlete’s foot, jock itch, ringworm
  - Need heat and humidity

- **Confluent & Reticulated Papillomatosis**
  - Skin infection on the trunk or chest
  - Forms brown scaly papules over skin

Case Study: Involvement

### Table 6: Pityriasis versicolor in relation to number and regions affected in patients studied from January to August 2010

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>59</td>
<td>38.4%</td>
</tr>
<tr>
<td>Neck</td>
<td>38</td>
<td>28.8%</td>
</tr>
<tr>
<td>Trunk and limbs</td>
<td>55</td>
<td>37.8%</td>
</tr>
</tbody>
</table>

Case Study: Findings and Factors

- Subjects were not allowed to use any type of medication within 30 days of study.
- All had a positive direct mycological examination and filled out questionnaire to aid in why and how people become infected.
References