Management of fungal infection

HKDU symposium
17th May 2015

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Synopsis

• Infection caused by fungus – mycoses
• Skin infection by fungus is common in general practice
• Infection of other sites less common when compared to bacterial infection
• Opportunists: invasive infection occurs often in immunocompromised host
Classification of fungal infection

- Yeast versus moulds
  - Yeast: Candida, Cryptococcus
  - Moulds: Aspergillus, Mucorales
  - Dimorphic fungi: Penicillium Marneffei
- Superficial versus deep
  - cutaneous infection
  - deep seated infection (invasive mycoses)
Examples of superficial mycoses

- Most often caused by candida and dermatophytes (Trichophyton, Epidermophyton, Microsporum)

- Usually cause nuisance but not life-threatening
Oropharyngeal candidiasis

• Also called oral thrush
• Common in infant and elderly
• Predisposing factors:
  - diabetes mellitus
  - xerostomia
  - dentures
  - antibiotics
  - weakened immunity (e.g. inhaled steroid therapy)
Oropharyngeal candidiasis

- Two clinical forms:
  - pseudomembranous form
  - atrophic form
Oropharyngeal candidiasis: pseudomembranous form

The buccal mucosa is involved here in the pseudomembranous form of oropharyngeal candidiasis.

Courtesy of Carol A Kauffman, MD.
Oropharyngeal candidiasis: atrophic form

In patients with dentures, candidal stomatitis frequently causes erythematous lesions on the hard palate without pseudomembranes.

Courtesy of Kenneth Shay, DDS.
Oropharyngeal candidiasis

- Diagnosis is made by swab and KOH preparation
- Presence of budding yeast with or without pseudohyphae formation under microscopy
- Clinical diagnosis in most of the time
Treatment

• Nystatin solution swish and swallow 600000 units QID for 7-14 days
• Fluconazole 200mg x 1 then 100m daily for 7-14 days

• Watch out for esophageal involvement
Vulvovaginal candidiasis

- Predisposing factors include diabetes, antibiotics use and high estrogen state
- Various topical preparations (cream and pessary) are available for treatment
Dermatophytosis (Tinea)

- Terminology depends on sites of involvement
  - Tinea capitis: infection of the scalp
  - Tinea pedis: athlete’s foot
  - Tinea corporis: infection of the skin of trunk
  - Tinea cruris: infection of the crural folds
  - Tinea unguium: infection of the nails
Dermatophytosis (Tinea)

A scaly plaque with associated hair loss is present on the scalp.

Dermatophytosis (Tinea)

Tinea capitis

A round patch of alopecia with overlying scale and "black dots" at the sites of follicular openings is present.

Dermatophytosis (Tinea)

Acute tinea pedis

The medial aspect of the left great toe demonstrates erythematous, papulovesicular lesions caused by *Trichophyton mentagrophytes*.

*Courtesy of John T Crissey, MD.*
Dermatophytosis (Tinea)

Fissuring and maceration are present between the toes in this case of interdigital chronic tinea pedis.

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Dermatophytosis (Tinea)

Tinea pedis and tinea manuum

This image shows concomitant tinea pedis and tinea manuum, also known as the "two feet, one hand" presentation.

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Dermatophytosis (Tinea)

Total destruction of the nail with a ridged, hyperkeratotic nail bed is present in this patient with totally dystrophic onychomycosis.

Dermatophytosis (Tinea)

Onychomycosis

White superficial onychomycosis caused by T. mentagrophytes.

Courtesy of John T Crissey, MD.
Dermatophytosis (Tinea)

- Topical antifungals suffice for majority of skin infection except tinea capitis
- Tinea capitis requires systemic antifungals (Griseofulvin, terbinafine or azoles)
- Tinea unguium requires systemic antifungals (Terbinafine, azoles like itraconazole)
- The duration of treatment for tinea unguium is 6-12 weeks
Deep mycoses

• Often occur in in-patient setting
• Complications of a weakened immunity
• High morbidity and high mortality
Deep mycoses

• Examples of deep mycoses include:
  - invasive aspergillosis
  - cryptococcosis
  - mucormycosis
Mucormycosis

• Mucorales causes most infection (Rhizopus spp., Mucor spp.)
• Rhinocerebral mucormycosis
• Pulmonary mucormycosis
• Gastrointestinal mucormycosis
Mucormycosis

• Rhizopus thrive in acidic environment with high glucose concentration
• Diabetes being an important risk factor for development of infection
• Most commonly rhinocerebral mucormycosis
Rhinocerebral mucormycosis

- Symptoms commonly include fever, facial pain, facial numbness, visual blurring and diplopia.
- Look for eschar in the hard palate
- In the setting of underlying predisposing factors: organ or stem cell transplant, AIDS, diabetes mellitus
Rhinocerebral mucormycosis

Rhinocerebral mucormycosis

- Treatment involves systemic antifungal therapy (amphotericin B or posaconazole) and surgical debridement, which is often extensive.
Rhinocerebral mucormycosis

Rhinocerebral mucormycosis

• Be aware of symptoms that might hint towards the diagnosis of mucormycosis in patients with diabetes.

• It is a rare condition, but can kill
Gastrointestinal mucormycosis

Lo OSH, et al. World J Gastroenterol 2010; 16(9): 1165-1170
Aspergillosis

• Most common site of infection: lung
• Pulmonary aspergillosis is an important complication in patients with haematological malignancy
• Early diagnosis is critical
• Treatment involve use of systemic antifungal, voriconazole would be the preferred choice
• Amphotericin B/liposomal amphotericin B if there is contraindication
Aspergillosis

Computed tomography (CT) pulmonary aspergillosis

Aspergillus cortical infarct with hematoma
Recapitulation

• Mycoses are often opportunistic infection
• Cutaneous infection is common in general practice
• Different forms of cutaneous fungal infection
• Deep mycoses and their relevance to general practice
~ The End ~