

Lecture 2



Candidiasis

Objectives

- Acquire the basic knowledge about Candida as a pathogen.
- Know the main infections caused by Candida species.
- Identify the clinical settings of such infections.
- Know the laboratory diagnosis, and treatment of these infections.

Introduction

- It is a unicellular, imperfect yeast fungus reproduced by budding.
- There are many species of Candida but the most common are:
 - ✓ **Candida albicans**
 - ✓ Candida parapsilosis
 - ✓ Candida tropicalis
 - ✓ Candida glabrata¹
 - ✓ Candida Krusei¹
- It is human commensal and can be found in: oral cavity, skin, gastrointestinal tract and genitourinary tract.
- Candidiasis is the infection caused by any species of Candida
- The most common invasive fungal infections is in immunocompromised patients.
- It is considered as an opportunistic infection.
- Transmission of opportunistic infections:
 - ✓ **Endogenous:** Colonization precedes infection, Antibiotics suppress normal flora and cause fungal overgrowth.
 - ✓ **Exogenous:** can happen during hospitalization and will be transmitted by the hand.

1.Both are resistant to antifungal drugs.

Clinical Features

- Mucocutaneous:

- ✓ **Oropharyngeal Candidiasis:** oral thrush “white or grey Pseudomembranous patches on oral surfaces specially tongue with erythema
 - Common in neonates, infants, elderly, immunocompromised patients.
- ✓ **Esophagitis:** Dysphagia
- ✓ **Vulvovaginitis:** thick discharge, itching irritation, lesion appears as white patches on vaginal mucosa
 - Common in pregnancy, diabetics, use of contraceptives.

- Cutaneous:

- ✓ **Intertriginous candidiasis:** infection of skin folds **eg. Axilla, buttock.**
 - Erythematous lesion, dry or moist or whitish accompanied by itching and burning sensation.
- ✓ **Nail infections:** Onychomycosis and Paronychia
- ✓ **Diaper rash:** in babies
- ✓ **Chronic mucocutaneous candidiasis**

- Pulmonary Candidiasis:
 - ✓ Primary pneumonia is less common and could be a result of **aspirations**
 - ✓ Secondary pneumonia commonly seen with hematogenous candidiasis in **immunocompromised patients**
 - ✓ Isolation of candida from **sputum**
- Candidemia:
 - ✓ Increased colonization
 - ✓ Damage in host barriers: **catheters, trauma, surgery**
 - ✓ Immunosuppression drugs
 - ✓ **Central Venous Catheters “CVC”**
- Invasive candidiasis: involvement of any organ
 - ✓ Septic shock, meningitis, ocular involvement
 - ✓ **Fever could be the only clinical manifestation**

Diagnosis

- Specimen depend on the site of infection: **swabs, urine, blood, CSF**
- **Microscope:** usually **gram positive**, budding yeast cells and pseudohyphae will be seen in stained smear or KOH
- **Culture:** SDA & Blood agar
 - ✓ Creamy moist colonies
- Blood culture
- Serology
 - ✓ Antigen eg. **Mannan** antigen using **ELISA**
 - ✓ Antibodies
- PCR
- Because C.albicans is the most common species to cause infection we use the following testes to identify it:
 - ✓ Germ tube test
 - ✓ Chlamyospore production in corn meal agar
 - ✓ Resistance to 500 µg/ml Cycloheximide
- If these 3 are positive the yeast is C.albican if negative then it may be any type of candida and we use **carbohydrate assimilation test to identify other species**

Treatment

- Oropharyngeal:
 - ✓ topical nystatin suspension,
 - ✓ Clotrimazole troches,
 - ✓ Miconazole,
 - ✓ Fluconazole
- Vaginitis:
 - ✓ Miconazole
 - ✓ Clotrimazole
 - ✓ Fluconazole
- Invasive Candidiasis:
 - ✓ Fluconazole
 - ✓ Voriconazole
 - ✓ Caspofungin
 - ✓ Amphotericin
- Candidemia:
 - ✓ Remove catheter if possible
 - ✓ Treatment for 14 days
- Points to consider:
 - ✓ *C. glabrata* can be less susceptible or resistant to fluconazole
 - ✓ *C. krusei* is resistant to fluconazole