

Please read this bit first

The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a "Journal Club" activity. This means that you must record those attending for CEU purposes. Thistle will **not** issue a certificate to cover these activities, nor send out "correct" answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT00025**.

Each attendee should claim **THREE** CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

Cycle 24 - Organism 1:

Candida albicans

Candida species are ubiquitous fungi and are the most common fungal pathogens that affect humans. The growing problem of mucosal and systemic candidiasis reflects the enormous increase in the pool of patients at risk and the increased opportunity that exists for *Candida* species to invade tissues normally resistant to invasion. *Candida* species are true opportunistic pathogens that exploit recent technological advances to gain access to the circulation and deep tissues. *Candida* species produce a wide spectrum of diseases, and high-risk areas for *Candida* infection include neonatal, paediatric, and adult ICUs.

Candida species also contain their own set of well-recognized virulence factors. Although not well characterized, several virulence factors may contribute to their ability to cause infection. The main virulence factors are surface molecules that permit adherence of the organism to other structures (eg, human cells, extracellular matrix, prosthetic devices), acid proteases, and the ability to convert to a hyphal form.

As with most fungal infections, host defects also play a significant role in the development of candida infections. Numerous host defects are associated with candida infections.

Candida species are the most common cause of fungal infection affecting immuno-compromised patients. Oropharyngeal colonization is found in 30-55% of healthy young adults, and *Candida* species may be detected in 40-65% of normal faecal flora. Three of every 4 women have at least 1 bout of vulvo-vaginal candidiasis (VVC) during their lifetime. In HIV-positive persons who are not receiving antiretroviral therapy, more than 90% experience oropharyngeal candidiasis and 10% have at least 1 episode of oesophageal candidiasis.

Infections due to *Candida* species can manifest in a wide spectrum of clinical syndromes as described below. The clinical presentation can vary depending on the type of infection and the degree of immuno-suppression.

Vulvovaginal candidiasis is the second most common cause of vaginitis. The patient's history includes vulvar pruritus, vaginal discharge, dysuria, and dyspareunia. Approximately 10% of women experience repeated attacks of VVC without precipitating risk factors. Physical examination findings include a vagina and labia that are usually erythematous, a thick curd-like discharge, and a normal cervix upon speculum examination.

Lab Studies

Unfortunately, findings from the laboratory studies are often nonspecific. Clinicians are required to act definitively and early based on a high index of suspicion. In the past, many patients with life-threatening candidiasis died without receiving antifungal therapy. Patients who remain febrile despite broad-spectrum antibiotic therapy, with either persistent neutropenia or other risk factors and persistent leukocytosis, should be suspected of having systemic candidiasis. To be effective, therapy should be provided early and empirically in such patients.

In candidemia and disseminated candidiasis, blood cultures are helpful but are positive in only 50-60% of cases of disseminated disease.

Treatment

Treatment of *Candida* infections varies substantially and is based on the anatomic location of the infection, the patients' underlying disease and immune status, the patients' risk factors for infection, the specific species of *Candida* responsible for infection, and, in some cases, the susceptibility of the strain to antifungal drugs. In January 2004, the Infectious Disease Society of America published updated practice guidelines for the treatment of candidiasis. These latest recommendations include newer antifungal agents, such as caspofungin and voriconazole, in several specific indications. The therapeutic options for the management of invasive candidiasis and candidemia continue to increase with the addition of newer echinocandins.

CPD Questions:

1. What percentage of HIV positive patients not receiving ARVs are likely to experience oropharyngeal candidiasis?
 2. Why are blood cultures for candidemia not always helpful?
 3. What are the "main virulence factors" involved in candida infections and what surfaces do they stick to?
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