



Candida species: Species distribution and antifungal susceptibility patterns

Tracy Arendse, Heidi Orth

To the Editor: *Candida* species cause serious infections in the immunocompromised and critically ill host. Studies have reported an emergence of non-*albicans Candida* (NAC) spp., particularly *C. tropicalis*, *C. glabrata*, *C. krusei* and *C. parapsilosis*.¹ The widespread use of fluconazole might have contributed to this increase in less-susceptible and intrinsically triazole-resistant *Candida* species.² While *C. albicans* remains the most common *Candida* species isolated at Tygerberg Hospital, especially in ICU patients, *C. tropicalis* and *C. parapsilosis* have emerged as predominant causes of candidaemia in children with haematological malignancies, and important pathogens in HIV-infected children. Fluconazole was active against all of our isolates and therefore continues to be the agent of choice for treating candidaemia. Because of changing trends, it is necessary to continuously or periodically monitor *Candida* species isolated in any specific setting, as well as antifungal activity, but this is not routinely done at many South African laboratories.

Methods

We investigated the distribution and antifungal susceptibility of *Candida* species isolated from various clinical specimens and antifungal susceptibility patterns of bloodstream isolates at Tygerberg Hospital. All consecutive non-duplicate *Candida* species isolated from March to September 2005 were identified using the germ tube test and a commercial identification kit (Auxacolor 2, Bio-Rad, France). Susceptibility to amphotericin B and fluconazole was determined for all blood isolates (E-test method, AB BIODISK, Sweden). Results were read after 48 hours' incubation and interpreted according to NCCLS M27-A2, 2002. Quality control was performed using *Candida albicans* ATCC 90028 and *Candida tropicalis* ATCC 750. Patient data analysis included age, sex, specimen type, diagnosis and ward.

Results

Of a total of 119 *Candida* isolates, 6 were excluded from the analyses as no patient details could be retrieved.

Seventy-five per cent of isolates were recovered from adults and 25% from children. *C. albicans* constituted 72%, and NAC 28%, of all *Candida* isolates from adult patients. In children,

Department of Pathology, Division of Medical Microbiology, Stellenbosch University and National Health Laboratory Service, Tygerberg, W Cape
Tracy Arendse, BSc (Med Bioscience), BSc Hons (Med Microbiol)
Heidi Orth, MB ChB, MMed (Microbiol Path)

Corresponding author: H Orth (horth@sun.ac.za)

C. albicans accounted for 67%, and NAC for 33%, of isolates. The adult surgical intensive care unit (ICU) had the highest number of *C. albicans* isolates (15.2%). Other wards with a high number of *C. albicans* isolates included the labour ward and obstetric antenatal clinic (predominantly from urine specimens), the paediatric ICU, and the paediatric infectious diseases ward (predominantly HIV-infected patients). The paediatric infectious disease and oncology wards had the highest figure for NAC: 11.8% and 8.8% respectively.

C. albicans was the most common species isolated when comparing the isolation of *C. albicans* with NAC from urine (29% v. 17%), blood (16% v. 7%) and pus (8% v. 1%). All bloodstream isolates, including 17 *C. albicans*, 4 *C. parapsilosis*, 3 *C. tropicalis* and 1 *C. lusitaniae*, tested susceptible to both fluconazole and amphotericin B.

Discussion

C. albicans (69%) is the most commonly isolated *Candida* species at Tygerberg Hospital, followed by *C. glabrata* (10%); *C. parapsilosis* (10%); *C. tropicalis* (4%); *C. lusitaniae* (2%); *C. krusei* (2%); and *C. lipolytica*, *C. guilliermondii*, *C. famata* (all 1%), which is consistent with international published data.³

Septicaemia was the most common diagnosis on the laboratory request forms. Positive blood culture isolates were mostly isolated from paediatric patients with malignancies where NAC predominated, which is consistent with studies citing that NAC occurs more frequently in leukaemia patients.⁴ *Candida* species were also commonly isolated from urine. Urinary tract infections are usually associated with indwelling urinary catheters, particularly in patients on broad-spectrum antibiotics, although positive cultures may also represent contamination of urine specimens with vaginal flora, particularly in cases of vaginal thrush.

A high number of *C. albicans* were isolated from the surgical ICU. In contrast with trends among immunocompromised patients, *C. albicans* remains the predominant strain among ICU patients.⁵ Risk factors for candidaemia include exposure to broad-spectrum antibiotics, invasive procedures and prolonged ICU stay.

All blood culture isolates tested susceptible to fluconazole, which is important since it has advantages over amphotericin B, including high oral bioavailability and low incidence of side-effects. Amphotericin B-susceptible results for *C. lusitaniae* should be interpreted with caution as this species has a higher propensity than other *Candida* species for developing resistance to amphotericin B.⁶



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