Isolation of *Candida dubliniensis* in a French hospital mycology laboratory

*Candida dubliniensis* was first described as a novel species in 1995. The close phenotypic similarities between *Candida albicans* and *C. dubliniensis* have led to the misidentification of these species, which have to be distinguished genotypically (Sullivan et al., 2005). *C. dubliniensis* differs from *C. albicans* with respect to epidemiology, certain virulence characteristics and the ability to develop fluconazole resistance in vitro (Pinjon et al., 2005). The increasing number of reports of the recovery of *C. dubliniensis* from normal and human immunodeficiency virus (HIV)-infected patients suggests that it may be a constituent of the normal oral flora (Sullivan et al., 1997). Epidemiological studies have been performed elsewhere but, in France, information on the occurrence of *C. dubliniensis* versus *C. albicans* is still lacking.

The present investigation was a prospective study conducted over a 5 month period (from August to December 2005). During this period we studied all yeast isolates cultured on CHROMagar Candida medium (Becton Dickison), a medium used routinely in our laboratory for fungal isolation from clinical samples. This medium allows selective isolation of yeasts, and simultaneously identifies *C. albicans*, *Candida tropicalis* and *Candida krusei* (Willinger & Manafi, 1999). *C. dubliniensis* colonies usually have a darker green colour compared to *C. albicans* (Faggi et al., 2005). However, CHROMagar Candida medium does not clearly distinguish between *C. albicans* and *C. dubliniensis* (Mahnss et al., 2005), and therefore all isolates presumptively identified as *C. albicans* or *C. dubliniensis* were tested with a commercial latex agglutination test, Bichro-dubi test (Fumouze). The test consists of blue latex particles coated with the mAb 12F7-F2, which reacts specifically with an antigen on the surface of *C. dubliniensis* yeast cells. This agglutination slide test was validated on yeast strains previously identified by PCR, and had 100% sensitivity and specificity for *C. dubliniensis* isolated on either Sabouraud dextrose or CHROMagar Candida medium (Marot-Leblond et al., 2006). The anti-fungal susceptibility of the isolates of *C. dubliniensis* was determined using the Etest method according the recommendations of the manufacturer (AB Biodisk).

A total of 503 isolates (from 238 patients) were presumptively identified as either *C. albicans* or *C. dubliniensis*. Of these, 10 isolates from eight patients were identified with the Bichro-dubi test as *C. dubliniensis*. Among all Candida isolates identified in the laboratory during the survey, the ratio of *C. dubliniensis* to *C. albicans* was 10/493 (2.0%). Interestingly, in seven of the ten samples in which *C. dubliniensis* was identified, it was associated with another Candida species, four times with *Candida glabrata* and on three occasions with *C. albicans*. As reported by others, we recovered *C. dubliniensis* predominately from HIV-infected patients. Six of our isolates were from four HIV-infected patients. These represented 4/24 (16.6%) of all Candida-positive clinical samples from HIV-infected patients. Two of these were recovered from oral samples and four from the respiratory tract. Only 4 *C. dubliniensis* isolates were from non HIV-infected patients versus 214 *C. albicans*, 4/214 (1.8%), similar to the recovery rate reported for a Dutch university hospital (Meis et al., 2000). These four isolates came from: two burns patients (one from sputum and one from burned tissue), one patient in the Intensive Care Unit (sputum) and an out-patient with oral candidosis. Susceptibility testing showed that all the *C. dubliniensis* isolates had low MICs for: amphotericin B (0.012–0.032 µg ml⁻¹), fluconazole (0.094–0.125 µg ml⁻¹), voriconazole (0.04–0.012 µg ml⁻¹) and caspofungin (0.047–0.094 µg ml⁻¹). In the present study, 42 Candida isolates were obtained from the sputum of 32 cystic fibrosis patients. In contrast to a published report, in which a relatively high rate of *C. dubliniensis* colonization was reported (11%) in this population (Peltroche-Llacsaahuanga et al., 2002), we did not isolate any *C. dubliniensis* from our cystic fibrosis patients.

In conclusion, in a prospective study conducted in a hospital mycology laboratory in France, the proportion of *C. dubliniensis/C. albicans* isolated from non-HIV infected patient was low, 4/214 (1.8%), as compared with 4/24 (16.6%) from HIV-patients. *C. dubliniensis* was most often associated with another Candida species, and none of the 10 isolates of *C. dubliniensis* was resistant to fluconazole.

These results emphasize the importance of using chromogen medium in epidemiological studies and suggest preferential testing of presumptive *C. albicans* from HIV patients to distinguish *C. dubliniensis*.

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