Clinical Significance of the Floral Shift in Candidiasis

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Candida albicans were the most commonly isolated candidal species in candidiasis. The past few decades have seen a gradual floral shift with many non-candida albicans species including C. glabrata, C. dubliniensis, C. krusei, C. tropicalis, C. parapsilosis, and C. Kefyr being isolated at greater proportions. The clinical significance of such epidemiological shift is based on the inherent resistance of these non-C. albicans species to common antifungal agents. Recent studies have shown that non-candida albicans exposed to an even minimal dosage of azoles, especially fluconazole, can acquire resistance through upregulation of genes involved in drug metabolism and elimination. Thus, prolonged exposure to anti-fungal agents would increase the risk of developing resistance. Evidence for the same can be obtained from recent studies showing a drastic increase in the prevalence of non-C. albicans species in cases with prolonged exposure to fluconazole.

An alternative explanation for the increased isolation of non-C. albicans species, especially C. dubliniensis could be explained by its phenotypical resemblance to C. albicans. Thus, many isolates of lesser-known C. dubliniensis could have been identified in the past as C. albicans. The recent development of highly sensitive diagnostic tools could have aided in the accurate identification of C. dubliniensis which in turn could be misinterpreted as an increase in its prevalence.

Nevertheless, there is an epidemiological shift in candida flora with a predominance of non-C. albicans species resulting in increasing cases of antifungal resistance. Thus, future research must focus on developing antifungal agents capable of overcoming the resistance of non-C. albicans. At present, amphotericin B, nystatin and caspofungin have proven to be relatively more effective against non-C. albicans than commonly used azoles. Despite its effectiveness nystatin, has a poor systemic absorption that limits its use to the local application. Thus, polyene antifungals like amphotericin B and second generation caspofungin are being promoted as the primary antifungals for candidiasis that are predominated by non-C. albicans species. Voriconazole is another anti-fungal which has shown promising results againstazole-resistant candidal species. In addition to developing novel anti-fungal agents, it is of utmost importance to curb the increasing use of azoles for longer durations as this is the main cause for the development of drug resistance. Apart from mainstream antifungals, recent studies are evaluating the use of other substances with anti-fungal effects. Trachyspermum ammi essential oil was found to be effective against all C. albicans isolates including fluconazole-resistant strains with a significant decrease in growth during the exponential phase. The oil also hampered with candida re-growth, reducing the refractory time.

To conclude, given the epidemiological shift in candidal flora, it is vital to develop novel anti-fungal agents capable of overcoming the growing resistance of non-C. albicans species. Also, it is of utmost importance...
that clinicians curb the liberal use of common antifungals as it is the leading cause for the development of resistance in both C. albicans and non-C. albicans species.

REFERENCES


