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REVIEW

Burden of serious fungal infections in the Dominican Republic[☆]



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Summary The Dominican Republic (DR) is the second largest Caribbean nation and, with Haiti, the DR accounts for nearly three-quarters of the cases of human immunodeficiency virus (HIV) infection in the Caribbean region and the highest rates of TB in the Americas. The present study estimated the burden of serious fungal infections and some other mycoses in the DR. The data were extracted from the World Health Organization Stop Tuberculosis (WHO STOP TB) program, the Joint United Nations Program on HIV/AIDS (UNAIDS), and searches for relevant literature via MEDLINE, PubMed, MedFacts, and so on. The chronic pulmonary aspergillosis (CPA), allergic bronchopulmonary aspergillosis (ABPA), and severe asthma with fungal sensitization (SAFS) rates were derived from the asthma and TB rates. When no data regarding mycoses were available, we used specific populations at risk and the frequencies of fungal infection in each of these populations to estimate the national prevalence. Among its population of 10,090,000, we estimated that 221,027 (2.2%) have a serious fungal infection, including 158,134 women with recurrent vulvovaginal candidiasis. We estimated high numbers of 25,150 for ABPA and 34,000 for severe asthma fungal sensitization (SAFS) (250 and 529/100,000, respectively). CPA was common, with an estimated 2122 cases, of which 707 followed pulmonary TB. The annual prevalence of CPA was estimated to be 1374 cases. Four cases of histoplasmosis and several cases of chromoblastomycosis have also been reported. Pityriasis versicolor and tinea capitis are frequent in children, and

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11% have kerion. Local epidemiological investigations are urgently required to validate or modify these estimates of serious fungal infections in the DR.

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Introduction

The Dominican Republic is the second largest Caribbean nation (after Cuba), both in area and population, with 48,445 square kilometers (18,705 sq miles) and an estimated 10 million people, of which one million live in the capital city of Santo Domingo. With the exception of sub-Saharan Africa, the Caribbean region has the highest HIV prevalence in the world. The Dominican Republic (DR) and Haiti account for nearly three-quarters of the HIV cases in this area and also exhibit the highest rates of TB in the Americas according to the World Health Organization [1]. Some researchers have estimated that between 6 and 11 percent of those with TB in the DR are also infected with HIV [1], which presents a dual challenge. La Romana is the third largest city in the DR and is located in one of the regions that is most seriously affected with HIV due to the high number of disenfranchised Haitians. The incidence of chronic obstructive pulmonary disease (COPD) in the DR is 0.5 per 1000 of the population [2].

Data regarding the occurrence of fungal infections in the Caribbean Region are scarce. However, there have been several reports of occurrences of mycoses in Cuba. Outbreaks of histoplasmosis have been described in French and German bat researchers returning from explorations of bat caves in Cuba [3,4]. Numerous cases of chromoblastomycosis and several cases of sporotrichosis and mycetoma have been reported [5,6]. Regarding

opportunistic mycoses, a high prevalence of vulvovaginal candidiasis in pregnant women (42.3%) has been recorded [7], and a very recent review documented 97 cases of cryptococcosis, 82 of which occurred in AIDS patients and 15 in non-AIDS patients [8]. Moreover, *Pneumocystis jirovecii* pneumonia (PCP) is known to occur frequently in AIDS patients [9]. An autopsy study of 307 AIDS patients revealed invasive pulmonary aspergillosis incidence of 2.2% [10], and a case of pulmonary aspergilloma has also been reported [11]. Superficial mycoses, viz. dermatophytic infections and mycotic keratitis, have also been recognized to be frequent in Cuba [5]. The limited information that is available regarding the prevalence of mycoses in Jamaica and Trinidad and Tobago has been reviewed in recent reports [12,13]. There have only been isolated case reports of deep mycoses and other fungal infections in most other parts of the Caribbean, for example, Haiti and Barbados.

Considering the large size of the population and the high prevalence of HIV and TB in the DR, serious fungal infections, including opportunistic mycoses, should be common despite the scarcity of reports of such infections in this country. The systemic fungal infections that have been recorded in the DR include two cases of AIDS-associated histoplasmosis [14,15] and a case of *Aspergillus* meningitis that was successfully treated with itraconazole [16]. Some superficial mycoses, such as pityriasis versicolor and tinea capitis, which are caused by *Microsporum audouinii* and *Trichophyton*

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