Fungal Pathogens Associated With HIV Infection

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The prevalence of fungal infections has increased drastically over the last decades, especially among patients with HIV type 1. Fungal diseases are some of the emerging diseases and mostly infect individuals with HIV type 1 (Bouckenooghe and Shandera, 2002).

Some of the most common fungal infections include candida and Cryptococcus. Other fungal infections among HIV-infected patients include endemic mycoses histoplasmosis, coccidioidomycosis, penicilliosis, blastomycosis, and aspergillosis. These fungal infections have manifested themselves among HIV patients. These fungal diseases are not specifically associated with certain parts of the globe, but they generally affect any HIV patient regardless of their location. However, incidences of the fungal disease are lower in high-income countries because of readily available antiretroviral drugs and early testing for HIV, unlike in low-income countries where there is high prevalence because patients have poor adherence to drugs, resistance to antiretroviral drugs, and late screening for HIV infections.

Candidiasis

This fungal disease is most common among HIV patients, and it manifests itself in the form of mucocutaneous candidiasis. According to a scientific study, at least 84 percent of HIV patients have contracted this fungal infection, and 55 percent of them have developed clinical thrush. Candida pathogens infect the gastrointestinal tract of adults, but most infections are Sentogenously acquired. Sometimes, the strain of candida can be transmitted from person to person (Ampel, 1996).

Candida strains that affect HIV patients appear to be the same as those that affect people without HIV. Candidiasis affects areas such as the esophagus, oropharynx, and vagina. Oropharyngeal candidiasis is common among men, while vaginal candidiasis is prevalent in women. Mucocutaneous candidiasis is treated either with topical or systemic antifungal agents, although these therapies do not eliminate the infection fully. Some azole drugs, such as fluconazole, have failed to treat candidiasis diseases such as oropharyngeal candidiasis. The failure of drugs to treat these fungal diseases is attributed to diminishing cellular immunity, drug interactions, and resistance that candida pathogens are developing against these drugs (Ampel, 1996).

According to the National Committee for Clinical Laboratory Standards (NCCLS), the administration of antifungal agents for HIV-infected patients, such as fluconazole, results in clinical failures and resistance by fungi, especially among patients with high immunodeficiency (Ampel, 1996).

Cryptococcosis

This is a rare disease that was identified before the HIV epidemic, and it is life-threatening among patients with AIDS. Cryptococcus neoformans are the fungi that cause the above infection. It has two species, neoformans, and gattii, which exist in different ecological niches.

It is assumed that inhalation of soil contaminated by excreta of birds causes cryptococcosis infection. Another cause of cryptococcosis neoformans is the red tree gum, which is common in rural Australia. Neoformans variety causes an infection that is common across the globe among HIV patients, and cases associated with the gattii variety have been reported to occur in tropical and subtropical regions.

Although no relationship has been established between the environmental sources of cryptococcosis neoformans and the development of this fungal disease in patients with HIV, many cases of cryptococcosis in people living with HIV are usually a result of neoformans variety because its ubiquity in the environment makes one easily exposed it. Suppression of cellular immunity is linked with the development of cryptococcosis in HIV patients. This can, in turn, lead to AIDs among the infected HIV patients. The vaccination of this fungal disease involves the use of oral fluconazole as the initial therapy for cryptococcosis meningitis in HIV patients. The administration of amphotericin B and oral flucytosine has proved to be effective in the faster clearance of cryptococcal matter in cerebrospinal fluid.

Therapy of cryptococcosis meningitis among HIV patients should start with the administration of amphotericin B with the addition of flucytosine. Fluconazole should be administered constantly as a suppressive therapy to prevent relapse (Ampel, 1996).

Histoplasmosis, Blastomycosis, and Coccidioidomycosis

Mycoses responsible for the above infections are found in specific geographical regions. These fungi are not associated with infections such as HIV because they are endemic, especially in large urban areas of the US where they are prevalent. With the spread of HIV to the Midwest of the United States, these fungi became endemic and opportunistic agents (Ampel, 1996).

Histoplasma capsulatum causes infections that occur across the globe and are mostly associated with the disease in HIV patients. It is common in tropical Africa, the eastern U.S., and the Caribbean.

Coccidioidomycosis is a common infection in patients with AIDS. According to a study by Tucson in Arizona, coccidioidomycosis develops in 25 percent of patients with HIV over a period of 41 months. Immunosuppression was the major risk associated with developing this disease.

According to data, cases of coccidioidomycosis in patients living with HIV are transmitted from person to person. Most cases of this fungal disease are reported in Arizona, although similar cases are found in San Joaquin Valley and Northbridge, California (Bouckenooghe and Shandera, 2002).

Blastomycosis is the least common, and fewer cases are only reported, especially in areas such as North America, among people living with HIV, and not more than 25 cases have been reported. Vaccines used for the treatment of this fungal infection include Amphotericin B and ketoconazole.

With the increased incidence of fungi as pathogens among HIV patients, there has been a need to prevent further spread and to increase the quality of life of these people, and the use of oral azoles and antifungal agents has been effective.

References

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