An Enabling Act

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An Enabling Act

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Infection with human T-lymphotropic virus type 1 (HTLV-1) can be associated with hematologic malignancy, inflammatory syndromes, or infectious complications. Herein, we bring attention to HTLV-1 infection complications as we discuss a case of disseminated cryptococcosis in a patient with HTLV-1-associated T cell lymphoma.

Keywords. Cryptococcus neoformans; human T lymphotropic virus 1; HTLV-1.

CASE REPORT

An 82-year-old woman, originally from the Caribbean, presented with fever and hemoptysis. She had no known comorbidities and she was not receiving immunosuppressive agents. A computed tomography of her thorax demonstrated extensive right middle lobe consolidation with satellite nodular lesions. She was treated empirically with piperacillin-tazobactam for necrotizing pneumonia with improvement of her symptoms. Ten days later, she was readmitted to the hospital after developing fever and hemoptysis. She had no known comorbidities and she was not receiving immunosuppressive agents. A computed tomography of her thorax demonstrated extensive right middle lobe consolidation with satellite nodular lesions. She was treated empirically with piperacillin-tazobactam for necrotizing pneumonia with improvement of her symptoms. Ten days later, she was readmitted to the hospital after developing fever and hemoptysis. She had no known comorbidities and she was not receiving immunosuppressive agents.

DISCUSSION

Cryptococcal infection may occur in HIV-infected individuals, organ transplant recipients, or otherwise immunocompromised patients. There are only very rare published reports of invasive cryptococcal disease in patients with HTLV-1-associated T cell leukemia/lymphoma [2]. Overall, cryptococcal disease seems to be a rare complication in HTLV-1-associated leukemia/lymphoma, although a potential association between cryptococcosis and HTLV-1 carrier state has been suggested [3, 4]. Cryptococcus neoformans variant neoformans and predominantly Cryptococcus neoformans variant gattii may also infect seemingly immunocompetent hosts [5]. Clinically, infection with either pathogen manifests similarly [6]. Acquisition occurs via the respiratory route, and pulmonary infection and dissemination to the central nervous system is common. Therefore, in case of pulmonary cryptococcosis in immunosuppressed hosts, it is important to exclude meningitis with lumbar puncture, because the presence of central nervous system disease alters...
the dose, duration of therapy, and need for intracranial pressure monitoring [7]. In large studies, involving mostly immunocompromised individuals, mortality of cryptococcal meningitis remains high, up to 20%, despite treatment with antifungal agents [8].

Although *Cryptococcus* species have a global distribution, HTLV-1 epidemiology has mostly clustered in Japan, sub-Saharan Africa, the Caribbean, and Latin America [9]. Apart from T cell leukemia/lymphoma and inflammatory syndromes, HTLV-1 infection has been associated with infectious complications such as strongyloidiasis, tuberculosis, and leprosy [9]. HTLV-1-associated decrease in type 2 helper T cell response and HTLV-1-associated malignant transformation of T cells are thought to predispose to parasitic infections and abnormal cellular immune responses, respectively [9, 10]. Retroviral coinfection with HTLV and HIV may also lead to increased frequency of HTLV-1-related neurological complications such as myelopathy [11]. Nonetheless, because most HTLV-1-infected individuals remain asymptomatic and T cell counts are normal, there are no established guidelines in monitoring HTLV-1-infected hosts for opportunist infections. Serological testing, based on epidemiologic suspicion, allows diagnosis and therefore can lead to decreased transmission of the virus, which takes place sexually, as a blood-borne infection, or from mother-to-child through breastfeeding [9]. In addition, knowledge of HTLV-1 infection may raise clinical suspicion for coinfection with another pathogen when HTLV-1-infected individuals seek care [12].

**Figure 1.** Peripheral blood smear, the arrow is pointing to a flower cell, which is a lymphocyte with petal-shaped nucleus. Flower cells may be seen in the setting of HTLV-1 infection or HTLV-1-associated T cell leukemia/lymphoma.

**Figure 2.** Cerebrospinal fluid Gram stain (magnification, x1000). The arrow is indicating an encapsulated yeast. Culture subsequently grew *Cryptococcus neoformans.*