Case Report

Pulmonary *Sporothrix schenckii* Infection in a HIV Positive Child

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Summary

***Sporothrix schenckii* is a ubiquitous fungus, causing mostly non life-threatening localized infections of the skin and subcutaneous tissues that can be treated with oral antifungal agents. Meningeal, pulmonary and osteoarticular dissemination occur mainly in immunosuppressed patients. Pulmonary sporothricosis is rare and responds poorly to treatment. Cases of disseminated sporotrichosis have most frequently been reported in patients residing in South America and Asia, and have increasingly been reported in AIDS patients. The distribution and pathogenicity of *S. schenckii* in Sub-Saharan Africa is not well known. We report a case of invasive pulmonary sporothrichosis in an eleven year old HIV-infected boy in Kinshasa, Democratic Republic of the Congo, successfully treated with oral fluconazole.**

Introduction

Sporothrix schenckii is found world-wide as a saprophitic organism in decaying vegetation, sphagnum moss and soil, particularly in temperate and tropical climates [1]. The usual mode of infection is by cutaneous inoculation of the organism. Infection can also be related to zoonotic spread from infected cats or scratches from digging animals. Pulmonary and disseminated forms of infection, although uncommon, can occur when *S. schenckii* conidia are inhaled.

The most common type of sporotrichosis is cutaneous lymphatic disease, accounting for 75 per cent of cases, followed by localized cutaneous presentations (20 per cent). Dissemination to osteoarticular structures and viscera is uncommon and appears to occur more often in patients who have a history of alcohol abuse or immunosuppression, especially AIDS [1–4].

Localized cutaneous, lymphocutaneous and osteoarticular cases of sporotrichosis can be treated with oral antifungal agents such as itraconazole. Pulmonary sporotrichosis responds poorly to treatment. Severe pulmonary infection requires treatment with amphotericin B, while mild to moderate infection can be treated with itraconazole [5]. Meningeal and disseminated forms of sporotrichosis usually require treatment with amphotericin B. AIDS patients most often have disseminated infection and require life-long suppressive therapy with itraconazole after initial use of amphotericin B.

While the epidemiology of *S. schenckii* has been studied in South Africa [6] and some case reports from Sudan [7] and North Africa [8] have been published, not much is known about the pathogenicity and prevalence of sporothrichosis on the African continent.

To our knowledge, this is the first case report of pulmonary sporotrichosis in an HIV infected child in Sub Saharan Africa. Even though the combination of antiretroviral (ARV), antituberculosis (TB) and antifungal agents could potentially lead to serious drug–drug interaction, this child was successfully treated with oral fluconazole.

Case Report

An eleven year old HIV-infected male child presented with a chronic non-productive cough and multiple oral lesions, conjunctival pallor and hypochromic eruptions throughout the body. In the following

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months, the child remained afebrile but developed a chronic productive cough. In January 2004, the boy developed high fever, diarrhea and vomiting. He was treated with ciprofloxacin, quinine, tinidazole, albendazole and chloramphenicol. Because of persistence of symptoms, the treatment regimen was changed to ceftriaxone, gentamycin, metoclopramide, dipyrone and intravenous fluid. Subsequently, the symptoms disappeared. In February 2004, the $CD4^+$ lymphocytes count was low (33 cells/μl or 3 per cent) indicating severe immunodepression. Antiretroviral (ARV) treatment was not initiated due to financial constraints.

His condition worsened during the next months with repeated episodes of fever, rhinorhea, diarrhea and increasing dyspnea. Several courses of antimicrobials, antimalarial treatment and prednisolone did not improve the general condition. In July 2004, the boy had 71 $CD4^+$ lymphocytes per μl (12 per cent). Results of renal and liver function tests were within normal limits [urea: 21 mg per cent (15–40 mg per cent), creatinine 0.77 mg per cent (0–1.4 mg per cent), serum glutamic oxaloacetic transaminase (SGOT) 27 U/l (<40 U/l), serum glutamic pyruvic transaminase (SGPT) 15 U/l (<45 U/l)]. The child was started on TB treatment (rifampicin, isoniazid, pyrazinamide and ethambutol) and ARV treatment (stavudine, lamuvidine and nevirapine). One month after the start of ARV and TB treatment, the child developed night sweats, a severe cough, dyspnea and hemoptysis. Chest X-ray showed non-specific infiltrates in both lung fields, accentuated most in the lower right lung field. A thick smear showed *Plasmodium sp*. trophozoites and a blood count showed 2600 white blood cells per mm^3 with 45 per cent lymphocytes and 55 per cent neutrophils. Quinine, erythromycin and albendazole, where added to his treatment, without any improvement. In September 2004, a 7-day course of fluconazole was given, with no clinical benefit. At the end October 2004, sputum was obtained and *S. schenckii* grew on Sabouraud's glucose agar medium. Treatment with fluconazole 200 mg OD was restarted at the end of November 2004, with marked improvement in the child's health after one month of treatment. In June 2005, the boy was last seen in good clinical condition, but with a persistent dry cough. He continues to take fluconazole 200 mg OD, ARV treatment as listed above and has finished the TB treatment.

Discussion

We present a case of pulmonary sporothrichosis in an immunodepressed HIV infected child. Because of the clinical presentation including prolonged cough, hemoptysis and fever in an HIV positive child with low $CD4^+$ lymphocyte count, the presumptive diagnosis was TB, for which treatment was started. When hempoptysis developed under TB treatment, a sputum culture on Sabouraud medium was done, yielding *S. schenckii* growth.

Although invasive fungal diseases are more prevalent in HIV positive patients in Sub-Saharan Africa [1, 9], diagnosis is seldom reported due to the lack of clinical suspicion and lack of appropriate laboratory infrastructure to confirm diagnosis.

While itraconazole and intravenous amphotericin B are the antifungal agents of choice for pulmonary sporotrichosis, these drugs are often not readily available in resource poor settings. Fortunately, the present case responded well to fluconazole [10]. Because of the HIV epidemic, treatment of fungal infections in children in the developing world may become increasingly difficult due to possible pharmacokinetic interactions between ARV treatment and drugs used to treat opportunistic infections. In this case, possible interaction could occur between nevirapine, rifampin and fluconazole [11–14].

However, while concomitant administration of RMP with fluconazole results in a decrease in area under the concentration-time curve and decrease in maximum concentration, a study in Thailand failed to demonstrate a significant difference in clinical outcomes between the patients treated with fluconazole and RMP and those treated with fluconazole alone [13].

The concomitant administration of NVP and fluconazole results in increased NVP levels. Because the incidence of serious hepatotoxicity is much higher when NVP is combined with fluconazole than in other studies where NVP is used alone, the combination of NVP and fluconazole should be used with caution [14].

In this case, it was decided to continue the TB treatment and the NVP- containing ARV treatment in combination with the fluconazole treatment due to the limited affordable alternatives in our setting. Fortunately, no apparent signs of ARV treatment failure or drug toxicity have been observed throughout 6 months of observation.

Although the combination of RMP, NVP and fluconazole should be avoided wherever possible, this case demonstrates that this combination can be effective and life saving in cases of pulmonary sporothrichosis, given adequate clinical follow up and laboratory monitoring.

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