

# Sporotrichosis: Understanding the Fungal Infection and its Implications

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**Received date:** June 09, 2023, Manuscript No. IPMMO-23-17047; **Editor assigned date:** June 12, 2023, PreQC No. IPMMO-23-17047 (PQ);

**Reviewed date:** June 23, 2023, QC No. IPMMO-23-17047; **Revised date:** July 03, 2023, Manuscript No. IPMMO-23-17047 (R); **Published date:** July 10, 2023, DOI: 10.36648/2471-8521.9.2.062

**Citation:** Santiago R (2023) Sporotrichosis: Understanding the Fungal Infection and its Implications. Med Mycol Open Access Vol.9 No.2: 62.

## Introduction

Sporotrichosis is a fungal infection caused by the fungus *Sporothrix schenckii*. This condition, also known as rose gardener's disease, can manifest in various forms and primarily affects the skin, although it can occasionally spread to other parts of the body. Sporotrichosis is most commonly contracted through contact with soil, plants, or organic matter containing the fungus. Let's delve into the different forms of sporotrichosis and its implications for human health.

Sporotrichosis is a subcutaneous mycosis caused by a dimorphic fungus belonging to the genus *Sporothrix*. This fungal infection can affect both humans and domestic animals, and in recent years, an increase in the geographic spread and prevalence of sporotrichosis has been observed globally. This systematic review aimed to examine the clinical-epidemiological and therapeutic aspects related to sporotrichosis co-infection with Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS). An extensive electronic search was conducted on databases including PubMed, Web of Science, Lilacs, Medline, Embase, Scopus and SciELO was performed to identify clinical cases of People Living with HIV (PLWH) with sporotrichosis published until May 2023. As a result, we found that most co-infected patients were male, representing 71.76% (94/131) of cases. The most prevalent age group was 41–50 years, with a mean age of 36.98 years. The countries with the highest number of cases were Brazil (75.57%, 99/131) and the United States (16.03%, 21/131). The most frequent clinical presentation was systemic dissemination, accounting for 69.47% (91/131) of the cases, followed by cutaneous dissemination with 13% (17/131). The mean CD4+ cell count was 154.07 cells/ $\mu$ L, and most patients used amphotericin B with at least one azole, which represented 47.33% (62/131) of cases, followed by azole monotherapy in 17.56% (23/131) of cases. As for the outcome, 51.15% (67/131) of the patients remained alive, and 37.4% (49/131) died. Therefore, it was concluded that sporotrichosis in PLWH is a disease with a high prevalence in Brazil and may be associated with systemic clinical manifestations requiring longer periods of systemic antifungal therapy.

## The Fungal Disease with Multiple Forms

Cutaneous sporotrichosis is the most common form of the infection and typically occurs when the fungus enters the skin through a small cut, puncture, or abrasion. It initially presents as a painless, raised red bump at the site of entry. Over time, the bump may develop into a nodule or an ulcer that may be covered in a crust. The infection tends to progress slowly, with new nodules or ulcers appearing along the path of lymphatic vessels as the fungus spreads. Cutaneous sporotrichosis is generally not life-threatening but can be persistent and require medical intervention. In rare cases, *Sporothrix schenckii* can enter the body through inhalation, leading to pulmonary sporotrichosis. This form of the infection primarily affects the lungs and can cause symptoms such as cough, chest pain, and shortness of breath. If left untreated, pulmonary sporotrichosis can progress to disseminated sporotrichosis, where the fungus spreads beyond the lungs to other organs, including the bones, joints, and central nervous system. Disseminated sporotrichosis is the most severe form of the infection and can be life-threatening, especially in individuals with weakened immune systems.

Diagnosing sporotrichosis often involves a combination of clinical examination, medical history review, and laboratory tests. A skin biopsy or culture may be performed to identify the presence of *Sporothrix schenckii* in affected tissues. In the case of pulmonary or disseminated sporotrichosis, imaging tests, such as chest X-rays or CT scans, may be used to assess the extent of the infection. Treatment for sporotrichosis typically involves antifungal medications. In cases of cutaneous sporotrichosis, localized lesions may be treated with topical antifungal creams or ointments. More extensive or severe cases may require oral antifungal medications, such as itraconazole or potassium iodide. Pulmonary or disseminated sporotrichosis often necessitates prolonged courses of systemic antifungal therapy.

## Prevention of Sporotrichosis

Preventing sporotrichosis primarily involves minimizing exposure to the fungus. Individuals working with soil, plants, or organic matter should take precautions, such as wearing gloves

and protective clothing, to avoid skin injuries and potential contact with *Sporothrix schenckii*. Proper wound care and hygiene practices, including washing hands after handling plants or gardening, can also help reduce the risk of infection.

Furthermore, prompt identification and treatment of sporotrichosis cases are crucial to prevent the development of severe forms of the disease. Individuals with weakened immune systems, such as those living with HIV/AIDS or undergoing immunosuppressive therapy, should be particularly vigilant and seek medical attention if they suspect exposure or exhibit symptoms consistent with sporotrichosis.

Sporotrichosis often enters the body through breaks in the skin, such as cuts, scratches, or puncture wounds. Gardeners, farmers, and people engaged in outdoor activities are at a higher risk of contracting this infection due to their increased exposure to the fungus in soil and plant materials. The initial infection typically presents as a painless, small bump or nodule at the site of entry, often resembling a bug bite.

Over time, the infection can progress along the lymphatic system, causing a chain of nodules to develop in a linear pattern.

This unique presentation, known as "lymphocutaneous sporotrichosis," is a characteristic feature of the disease. If left untreated, the infection can disseminate to other parts of the body, leading to more severe forms of sporotrichosis, including joint, bone, and central nervous system involvement.

In conclusion, sporotrichosis is a fungal infection caused by *Sporothrix schenckii*, with various forms ranging from cutaneous to pulmonary and disseminated. Early diagnosis and appropriate treatment are essential in managing the infection and preventing its progression. By adopting preventive measures and promoting awareness, we can minimize the risks associated with sporotrichosis and protect our health. Sporotrichosis is a rare fungal infection that primarily affects the skin and subcutaneous tissues. Understanding the causes, manifestations, and risk factors of sporotrichosis is crucial for early diagnosis and appropriate treatment. By adopting preventive measures and prompt medical attention, individuals can reduce the risk of contracting this fungal infection and mitigate its potential complications.