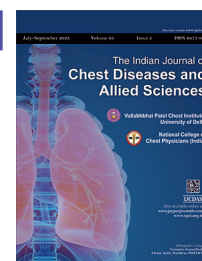


CASE REPORT

A Rare Case of Invasive Pulmonary Infection by *Syncephalastrum racemosum* in a Pulmonary Tuberculosis Patient

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ABSTRACT

Background: *Syncephalastrum racemosum* is a saprophytic and ubiquitous fungus found in soil, mainly in tropical and subtropical areas, usually does not cause human infections and if it does, affects immunocompromised persons. It mainly causes subcutaneous infections and onychomycosis and rarely pulmonary infections.

Case description: We report a case of a 36-year-old female, diagnosed with pulmonary tuberculosis and on antitubercular treatment for 1 month, presented to the emergency with complaints of shortness of breath, fever, cough with sputum production and mildly blood-stained sputum since 3 days. The chest X-ray showed bilateral infiltrates in the lower zones. Sputum investigations revealed AFB negativity, sterile pyogenic culture, and positive *S. racemosum* fungal culture. Deoxycholate amphotericin B was started on the basis of sputum reports, but unfortunately, the patient expired within 1 day of starting treatment.

Conclusion: The above case describes infection by a rare fungal species in an immunocompromised patient with tuberculosis. Few cases are reported, so limited data are available to understand the complete disease implications. However, we should keep it as a differential in an immunodeficient patient with an invasive infection for timely diagnosis and treatment.

Keywords: Case report, Pulmonary tuberculosis, Sputum examination, *Syncephalastrum racemosum*.

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ABBREVIATIONS USED IN THIS ARTICLE

AFB = Acid fast bacil; ATT = Antitubercular treatment; MIC = Minimum inhibitory concentration; WBC = White blood cells.

INTRODUCTION

Zygomycosis represents a spectrum of infections caused by ubiquitous fungal pathogens. *Syncephalastrum racemosum* species belong to the *syncephalastrum* genus, *zygomycetes* class and *Mucorales* order. Antecedently, these fungi were regarded as non-pathogenic to the humans and were contemplated as laboratory contaminants. In the current era, however, these fungi are surging as highly opportunistic pathogens and immunocompromised people per say, patients on steroid therapy for a long term, poorly controlled diabetics, or patients with malignant etiology, patients on treatment with cytotoxic drugs, AIDS, having renal disease, or liver disease (cirrhosis) are the ones affected predominantly. The diseases caused by them can be divided into primarily six types: rhino cerebral, pulmonary, cutaneous, gastrointestinal, isolated renal, and rarely disseminated.¹ Since the species is rare in causing human infections, data obtained on response to various antifungal agents is also sparse. Nevertheless, contemporary evolution in strategies for diagnosis now results in early identification and treatment of the infection. The drug of choice is considered to be amphotericin B with regards to its low minimum inhibitory concentration (MICs).² Here, we are describing a rare case of *S. racemosum* causing invasive pulmonary infection in a tuberculosis patient.

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Patient consent statement: The author(s) have obtained written informed consent from the patient for publication of the case report details and related images.

Case Description

A 36-year-old female, diagnosed as having pulmonary tuberculosis on antitubercular treatment for 1 month, came to emergency with the chief complaints of shortness of breath, cough, sputum, fever, and mild blood-stained sputum since 3 days. On examination, patient was conscious and oriented, febrile to touch, having room air oximetry (SaO₂) of 76%, blood pressure was 90/50 mm Hg, respiratory rate 28/min, pulse rate 112/min, and coarse inspiratory crepitations bilaterally in all auscultatory areas. Bilateral infiltrates were seen in lower zones on chest X-ray PA view as shown in [Figure 1](#). She was previously hospitalized 30 days back with similar



Fig. 1: Chest X-ray of the patient on day 1

complaints but hemoptysis was absent and the patient was diagnosed as sputum positive pulmonary tuberculosis after 7 days of starting antitubercular treatment (ATT) and clinical improvement.

On recent admission, hemoglobin was 9.0, white blood counts 20,000, SGOT/PT 418/350, and PT/INR 11.9/0.88. Sputum investigations revealed AFB-negative and pyogenic culture sterile. Patient deteriorated despite antibacterials along with ATT. White blood cells (WBC) increased to 40,000 and SGOT/PT 700/670 within 3 days. Sputum fungal culture was sent which came positive for *S. racemosum*. She was started on amphotericin B (deoxycholate) on the basis of sputum reports only. Histopathological examination or bronchoscopic galactomannan could not be assessed due to worsening condition of the patient and unfortunately, she expired within 1 day of starting treatment.

DISCUSSION

Syncephalastrum is a filamentous fungus which is ubiquitous in the environment and found in soil, mainly in tropical and subtropical areas. The importance of diagnosing fungal infections is increasing as they are emerging in a wide manner in recent years and frequently causing fatal mycotic disease, due to plenty of risk factors, such as use of broad-spectrum antibiotic, empirical antifungal treatment, steroids, aggressive chemotherapies, and sustained leucopenia. *Syncephalastrum racemosum* is a species that rarely infects humans. A very few cases have been reported in medical literature of this species causing subcutaneous and onychal infections, 1 with intraabdominal infection and less than 5 cases have been reported of invasive pulmonary infection, first by Kirkpatrick M, Rodriguez G, and 2 cases by Irshad M et al.³ These fungi characteristically produce large, ribbon-like branched hyphae that are irregular in diameter with only occasional septae, hence considered as aseptate fungi. They have a peculiar characteristic of producing merosporangia with the spores arranged in a linear series, which could lead to confusion with *Aspergillus*.⁴ These spores can be seen in the nose, throat, and stool of healthy subjects but in immunocompromised

patients, they can cause invasive disease. The pathogen on culture forms colonies which are initially greyish-white and fluffy but later due to sporulation, changes to dark brown color.⁵ Radiologically, it only shows consolidation with rapidly leads to acute respiratory distress syndrome-like picture. The only effective treatment option available as per the data is amphotericin B or posaconazole, although much has not been studied due to its paucity of invasive human infections, and even if diagnosed, being too late to assess the treatment outcomes. Besides this, the prognosis of patient is also determined by the immune status of patients. Coming to our case, bearing in mind, the immune status of patient and recent hospitalization, we anticipated viral pneumonia, fungal infection, atypical and multidrug-resistant bacterial pneumonia, and primary disease progression as the differentials. However, there was a delay in diagnosis till the sputum culture reports were obtained, with so many differentials and diagnostic methods, we still need a high index of suspicion for establishment of clinical significance of such a rare fungal species. Furthermore, more substantial and various studies are needed to form treatment protocols and management strategies for the same.

Clinical Significance

Respiratory tract usually has a high risk of fungal invasion and infection due to humid atmosphere in the system. Chances of infection increase in immunocompromised patients. Also, it is difficult to recognize them as sputum fungal culture takes time to be reported due to their slow growing nature which generally leads to presentation in a worsened condition causing hazardous effects and danger to life. Hence, an early suspicion and a step toward diagnosis of fungal infections should be considered in such patients.

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