Pulmonary Scopulariopsis in a chronic tobacco smoker

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ABSTRACT
A 70-year-old male smoker, with a three-month status of post-balloon angioplasty for ischaemic heart disease, presented with a one-week history of fever, haemoptysis and chest discomfort on coughing. The patient did not report any loss of weight or appetite. On examination, he was febrile. Pulmonary function tests revealed obstructive airway disease. High resolution computed tomography of the lungs revealed fibrosis with bronchiectasis in both the upper lobes and a spiculating subpleural mass in the posterior aspect of the right lung apex. Subsequent bronchoalveolar lavage (BAL) culture yielded the Scopulariopsis species. Our patient was treated with a four-week course of amphotericin B, followed by itraconazole. At the 24-month follow-up, the patient was asymptomatic. Subsequent BAL cultures revealed no fungal growths, and radiological studies showed a regression in the lesion.

Keywords: pulmonary, Scopulariopsis, tobacco smoker

INTRODUCTION
Pulmonary infections due to Scopulariopsis have been reported, especially in immunocompromised patients. We report a rare instance of Scopulariopsis in the lung of an immunocompetent tobacco smoker.

CASE REPORT
A non-alcoholic, 70-year-old male smoker for the last 50 years (20 sticks of cigarettes per day), who had ischaemic heart disease and balloon angioplasty performed three months earlier, presented to the hospital with a history of fever, haemoptysis and chest discomfort on coughing for a period of one week. Haemoptysis initially consisted of speckled blood mixed with sputum. At the time of presentation, frank blood was found in the sputum. The patient also complained of mild intermittent giddiness. No loss of weight or appetite was reported.

On examination, the patient was febrile. The jugular venous pressure was raised. The examination of the respiratory system was normal, but a right supraclavicular lymph node was palpable. The blood investigations revealed anaemia (haemoglobin 9.9 gm%) with normal white blood cell count. The differential count showed 51.9% neutrophils and 33.6% lymphocytes. The initial sputum that was sent for microscopy and culture yielded nothing significant.

High resolution computed tomography (CT) of the lung revealed fibro-bronchiectatic changes in both the upper lobes, with a spiculating subpleural mass and an eccentric cavity spot in the posterior aspect of the right lung apex. No radiological evidence of a fungal ball was observed in the cavitating lesion. CT-guided fine needle aspiration cytology revealed few inflammatory cells and no malignant cells or acid-fast bacilli (AFB) (Fig. 1a), while the pulmonary function test revealed obstructive airway disease. The echocardiography findings were normal. Bronchoscopy showed a blood clot in the posterior segment of the bronchus of the left upper lobe of the lung. Bronchoalveolar lavage (BAL) from this site was sent for cytological and microbiological assessment. On removal of the clot, no bleeding or endobronchial lesion was observed. Pleural biopsy was not done as the lesion was intrapulmonary. Cytological study of the bronchial aspirate revealed red blood cells, bronchoalveolar cells, acute inflammatory cells and pigmented histiocytes. Large numbers of branching septate fungal hyphae were also seen.

There was no evidence of malignant cells and AFB. On culture, Klebsiella pneumonae was isolated from the BAL using the quantitative method, but the amount was less than 10^4 colonies, which was insignificant. Hence, no treatment was administered, as we did not consider the bacterium to be responsible for the lesion. The AFB culture performed using the Lowenstein-Jensen medium and the MGIT 960 System did not show any growth after six weeks. A cinnamon-coloured fungal growth was found, which was identified as Scopulariopsis brevicollis, due to the presence of chains of rough and spiny thick-walled conidia on shorter conidiophores (Fig. 2) that
50 years could have been responsible for the lesion. The tobacco moulds used for making the bidis, a local form of cigarettes in the Indian subcontinent, contain Aspergillus or Scopulariopsis, which can lead to the formation of non-necrotising granulomas. However, our patient did not have any occupational exposure. The fungal cultures from his home walls and his car air-conditioning vents did not yield any fungal growth. Thus, it was unusual that pulmonary Scopulariopsis was found in an immunocompetent patient with no occupational exposure or agricultural hobbies. Amphotericin B is the drug of choice for such infections; however, due to renal impairment in our patient, the treatment was discontinued after four weeks and replaced with oral itraconazole. Although some in vitro anti-fungal susceptibility studies for Scopulariopsis isolates have shown its resistance to itraconazole, in this case, the patient showed a good response and no resistance was observed, as was also reported by Patel et al. The identification of Scopulariopsis would have been missed had the microbiological analysis not been performed. Hence, with the advent of emerging pathogens in pulmonary diseases, clinicians must resort to microbiological diagnosis for lung lesions, especially in chronic tobacco smokers.

DISCUSSION

Members of the genus Scopulariopsis are common soil fungi. Most commonly, they are implicated in onychomycosis. There have also been reports of onymycosis, keratitis, prosthetic valve endocarditis, sinusitis, brain abscess, and cutaneous, subcutaneous and bone invasions by these pathogens in both immunocompetent as well as immunosuppressed individuals.

Scopulariopsis has recently emerged as one of the fungal pathogens in pulmonary diseases. Pulmonary Scopulariopsis has been reported in lung transplant and in orthotopic heart-lung transplant patients. Scopulariopsis fungal ball from the right middle lung lobe has been resected in a 67-year-old woman. Invasive infection due to Scopulariopsis brevicaulis has been diagnosed in a stem cell transplant patient as well. Pulmonary infections could be caused by inhalation of the mould, leading to the lodging of the organism, which results in granulomatous reaction in an immunocompromised patient. Scopulariopsis rarely causes pulmonary disease in immunocompetent patients.

In the present case, we speculated that the tobacco that the immunocompetent patient used to smoke for the past 50 years could have been responsible for the lesion. The tobacco moulds used for making the bidis, a local form of cigarettes in the Indian subcontinent, contain Aspergillus or Scopulariopsis, which can lead to the formation of non-necrotising granulomas. However, our patient did not have any occupational exposure. The fungal cultures from his home walls and his car air-conditioning vents did not yield any fungal growth. Thus, it was unusual that pulmonary Scopulariopsis was found in an immunocompetent patient with no occupational exposure or agricultural hobbies.

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REFERENCES


