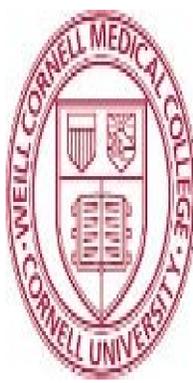


Lung cancer a red herring: re-examine the evidence



Sarah Salameh^{1,2}, Hamad Abdel Hadi¹, Mohd Wani¹, Ehab Massad¹, Samir Alhyassat¹, Maliha Thapur¹ and Faraj Howady¹

¹ Department of Medicine, Division of Infectious Diseases, Hamad Medical Corporation, Doha, Qatar

² Weill Cornell Medical College, Doha, Qatar

Introduction

Invasive fungal infections are frequently elusive when encountered in immunocompetent patients with significant morbidity and mortality despite modern diagnostic assessment. Mucormycosis is a rare invasive fungal infection that belongs to the Mucorales order with *Rhizopus* sp being the most prevalent pathogen. It is usually encountered in the context of life threatening opportunistic infections in the immunocompromised host but occasionally might cause serious infections in immunocompetent individuals especially in patients with diabetes because of its acidophilic affinity¹.

Case Report & Methods

A 64 year male newly diagnosed with diabetes presented with acute symptoms of fever, cough and hemoptysis. His chest X-ray (Fig 1) showed right hilar and upper lobe shadowing and subsequent CT scan demonstrated changes consistent with alveolar cell carcinoma. Bronchoscopy did not show endobronchial pathology and was negative for malignancies on cytology. Microbiological tests were all negative for TB including TB-PCR and culture but grew *Rizopus* Sp which was initially discarded as a contaminant because of anchoring bias towards a neoplastic process. The patient was treated with antibiotics and discharged to be followed but was readmitted with worsening symptoms and progression both clinically and radiologically . Updated CT (Fig 2) showed progressive cavitating lesion abutting tributaries of the pulmonary artery. Recurrent haemoptysis necessitated emergency interventional embolization followed by elective lobectomy. Histology (Fig 3) showed necrotizing granulomatous inflammation (Fig 3a). Fungal hyphae could be identified at high magnification with PAS special staining (Fig 3b & c). The fungi are wide, 10-15 µm in diameter, variable in width, and branching at right angles (figure 3d: Grocott special stain), confirming the diagnosis of Mucormycosis. The patient subsequently received high dose Liposomal Amphotericin followed by maintenance Posaconazole therapy with uneventful outcome.

Results of evaluation

Fig 1 A-B and Fig 2 A-B : Chest X-Ray and CT at presentation and reevaluation showing progression of right projecting pathology evolving into homogenous right upper lobe lesion

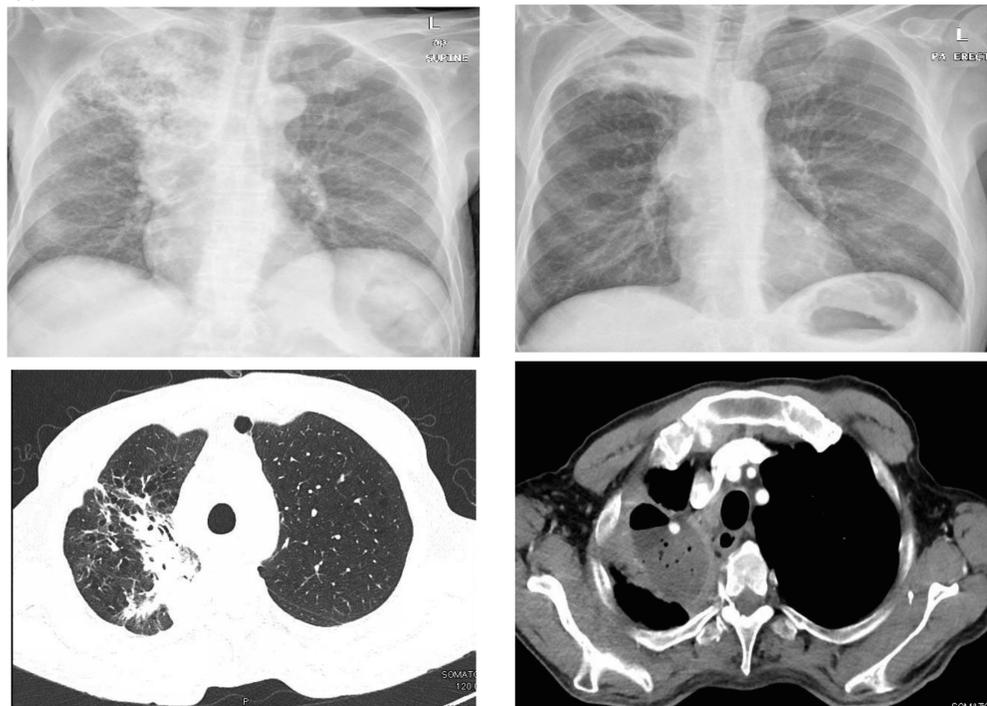
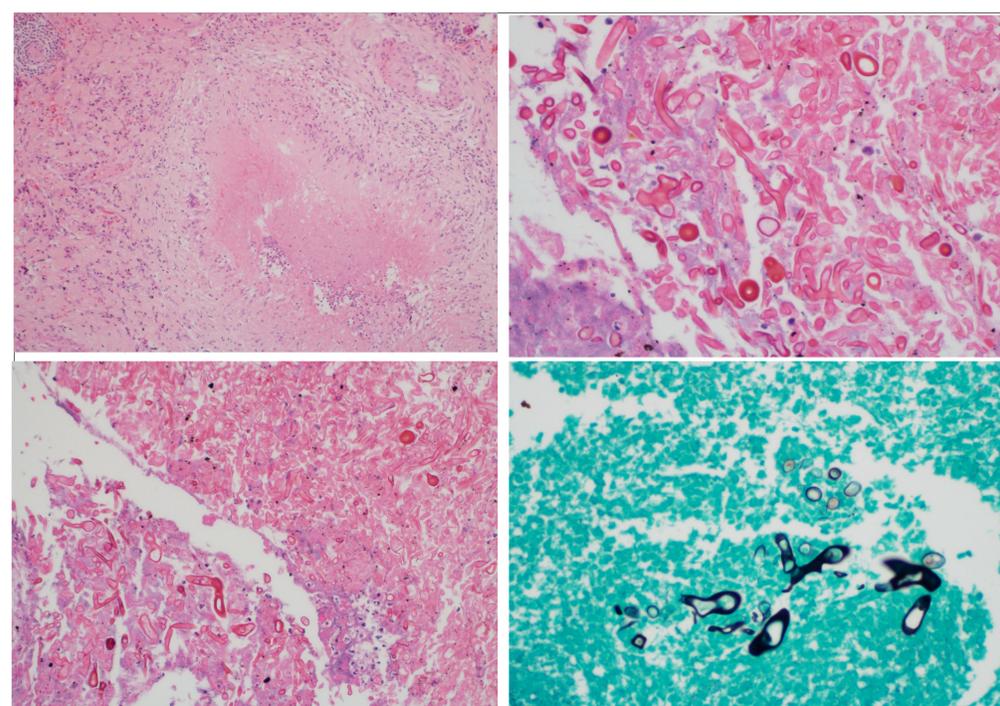


Fig 3 a, b, c, & d (from left top to right bottom) : Histological examination following resection of infected tissues



Discussion

Mucormycosis is an invasive fungal infection caused by filamentous fungi. Most common etiological agents in culture-confirmed cases are attributed to *Rhizopus*, *Mucor* and *Cunninghamella bertholletiae* species. These fungi are ubiquitous in the environment and their acquisition is facilitated by inhalation of fungal spores (1, 2). Infectious predisposition is classically associated with phagocyte dysfunctional states such as would occur in hematological malignancies and solid organ transplant recipients.

Poorly controlled diabetes mellitus particularly ketoacidosis represents a hidden threat which deserves to be highlighted as it can be associated with ominous consequences if overlooked. The association stems from the pathophysiology of disease which favors fungal growth; namely, the acidophilic milieu which facilitates release of iron promoting spore germination and hyphal invasion (3) .

Pulmonary mucormycosis is the second most prevalent form of invasive fungal infection following rhino-orbital disease . The disease usually has an indolent course with delayed presentation, assessment and management because of difficulties attributed to rare occurrence. Typical presenting symptoms are cough, dyspnea, chest pain and hemoptysis, as well as associated weight loss. Because of the predilection of the fungus to invade blood vessels; hemoptysis is usually a predominant feature which can progress to serious complication if not managed appropriately (3) Since the disease commonly features as radiological focal consolidation, patients are frequently treated as pneumonia with some improvement but ultimately relapse.

Conclusions

This case demonstrates the importance of considering invasive fungal infections including Mucormycosis during the assessment of potential pulmonary neoplastic diseases particularly in patients with diabetes . The associative pattern between Mucormycosis and diabetes should also be emphasized before discarding unexplained microbiological cultures during assessment .

References

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