中文題目：一個糖尿病控制不佳病人其肺部出現快速開洞病灶 ： 一位肺白黴菌病例報告與文獻綜述

英文題目：Rapidly progressive pulmonary cavitary lesions in a poorly controlled diabetic patient: a case report of pulmonary mucormycosis and literature review

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Introduction:

Mucormycosis is a rare, opportunistic but aggressive fungal disease. Among all possible infection sites, rhino-orbital-cerebral lesion is the most common, followed by pulmonary lesions. Initial radiographic findings largely include air crescent sign and halo sign; lung cavitation, on the other hand, is less observed. Cavitation, however, predominantly points to several differential diagnoses such as bacterial infection, tuberculosis, aspergillosis or malignancies. Mucormycosis challenges physicians with great difficulty in early diagnosis. Herein, we report a case of a 73-year-old woman with poorly controlled type II diabetes mellitus, who had several significant cavitations and was eventually diagnosed with pulmonary mucormycosis.

Case Presentation:

This was a 73-year-old woman with underlying type II diabetes mellitus, chronic kidney disease, hypertension, dyslipidemia and transient ischemic attack under medication control. She presented with fever, productive cough and dyspnea for one week. Her diabetes was poorly controlled and the corresponding HbA1c upon admission reached 10.2%.

Initial survey revealed leukocytosis and chest X-ray reported ill-defined lesion over the right upper lung. We prescribed ampicillin-sulbactam and levofloxacin empirically for community acquired pneumonia. The follow-up chest X-ray revealed bilateral alveolar opacities with formation of cavities. The chest computerized tomography (CT) reported multiple solid cavitary lesions over bilateral lungs. We arranged CT-guided biopsy for the cavitary lesion over the left upper lung. Empirical anti-tuberculosis treatments were initiated immediately after the biopsy. The pathology of lung biopsy reported mucormycosis. Liposomal amphotericin B was prescribed for pulmonary mucormycosis. The follow-up chest CT two weeks later showed partial response. She was discharged with oral posaconazole as the continuing treatment of pulmonary mucormycosis. She received anti-fungal treatment for a total of six weeks. The chest x-ray showed nearly total resolution three months after the end of treatment.

Discussion:

Mucorales are ubiquitous, they can be found on decaying vegetables, feces, in the soil, etc. We ma y inevitably breathe in the air containing abundant Mucorales spores. However, under most circum stances, our robust immune system is capable of defending the Mucorales, preventing them from t hriving. On the contrary, in patients with a flawed immune system, the spores may overgrow. Muc orales may consequently devastate tissues and vessels, causing a wide variety of clinical symptom s, such as hemoptysis and impaired eyesight. Listed from high to low incidence, the infection of m ucorales, or mucormycosis, may present in the rhino-orbital-cerebral, pulmonary, cutaneous or sub cutaneous, gastrointestinal or disseminated form.

Pulmonary mucormycosis is a rapidly progressive infection that occurs after inhalation of spores in to the bronchioles and alveoli. The majority of patients have fever, accompanied with mild to seve re hemoptysis. It may be challenging to differentiate its clinical presentations from other common bacterial pulmonary infections. Differential diagnosis is further clouded due to its often negative fi nding in sputum cultures. Physicians are advised to be aware of mucormycosis infection in high-ri sk patients with new signs and symptoms of pulmonary infection after having received empiric ant ibiotics but in vain. Diagnosis relies on histopathologic identification of an organism with a structu re typical of Mucorales, for which transbronchial biopsy is used most frequently. Surgical extirpati on or open lung biopsy may be performed alternatively if transbronchial biopsy is unavailable. His tology may facilitate the distinguishing of mucormycosis from aspergillosis, as both of which shar e similar clinical symptoms and presentations. More novel detection of circulating Mucorales DN A in blood and next-generation sequencing of microbial cell-free DNA both appear to be a fair and fast diagnostic test that may precede diagnosis by culture or histopathology.

Alongside deadly symptoms, mucormycosis is resistant to many antifungal agents, giving rise to hi gh mortality rates. Individuals having diabetic ketoacidosis, having experienced major trauma, or t hose taking deferoxamine for iron overload, or immunocompromised patients with hematological malignancy (e.g., leukemia, lymphoma) are among high-risk patients to infect mucormycosis.

Choice of first-line therapy for mucormycosis should be based on localization, renal function, etc. Liposomal amphotericin B remains the most optimal drug of choice for those with normal renal fu nction; alternatively, for those with renal impairment, posaconazole or isavuconazole is recommen ded. Oral forms of the aforementioned triazoles can also be used as step-down therapy. It should b e noted that metabolism of some medications (e.g., cyclosporine, tacrolimus) may be interfered wit h by triazoles; thus, therapeutic drug monitoring may be indicated.

Other than antifungal treatment of mucormycosis, comprehensive management should also includ e, if possible, surgical debridement of the lesion and reduction of immunosuppressants, iron-chelat ing agents, correction of ketoacidosis, and control of hyperglycemia, etc.

Conclusion:

Mucormycosis is a rare but aggressive infectious disease which poses a challenge for physicians to diagnose. Physicians should consider Mucormycosis in differential diagnosis if their patients have lung cavitary lesions, especially with underlying disease of type II diabetes or hematologic malign ancy.

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