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(CASE REPORT)

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Invasive pulmonary aspergillosis in an immunocompetent diabetic patient: A case report and review of the literature

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Abstract

Introduction: Invasive pulmonary aspergillosis (IPA) is a serious opportunistic fungal infection that usually occurs in immunocompromised patients. However, it can exceptionally be seen in immunocompetent patients with chronic comorbidities such as diabetes.

Observation: We report the case of a 41-year-old patient with type 2 diabetes, with no other factors of immunosuppression, who presented with a productive cough, prolonged fever and minimal hemoptysis resistant to antibiotics. Chest CT scan showed micronodules in a 'budding tree' pattern. The diagnosis of IPA was confirmed by aspergillus PCR on bronchoalveolar lavage. The patient responded well to voriconazole.

Discussion: This case highlights the importance of considering invasive aspergillosis even in the absence of major immunosuppression. Diabetes, by impairing neutrophil function, is a significant risk factor. Chest imaging and fungal diagnostic tests (aspergillus antigen, PCR) play a central role in early diagnosis.

Conclusion: Invasive pulmonary aspergillosis should be considered in cases of antibiotic-resistant febrile pneumonia in diabetic patients. Early antifungal treatment improves the prognosis.

Keywords: Invasive Pulmonary Aspergillosis; Diabetes; Immunocompetent Patient; Voriconazole; Clinical Case

1. Introduction

Invasive pulmonary aspergillosis (IPA) is a serious opportunistic fungal infection that occurs when the body's defense system is weakened, particularly in people with blood disorders, who have undergone a transplant, or who are taking long-term immunosuppressants or corticosteroids. However, there are also cases in individuals whose immune system is not weakened and who have other diseases such as diabetes. These cases are rare [1,2,3]. Diagnosis is difficult because the signs and images in the lungs resemble other diseases caused by microbes or tumors [4,5,6,7]. We report a case of API in a man with type 2 diabetes, an immunocompetent individual who was treated in Senegal.

1.1. Medical observation

We report the case of a 41-year-old patient, a teacher by profession, married with no children, residing in Soraya (Kédougou, Senegal), who has been monitored for type 2 diabetes since 5 October 2023 and treated with metformin 500 mg, 1 tablet twice daily.

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1.2. History of the illness

Since September 2023, this patient had been experiencing a gradually productive cough, associated with small amounts of bloody sputum, chest pain similar to stitches without radiation, and intermittent episodes of fever. Several courses of antibiotics (amoxicillin-clavulanic acid 1 g three times daily for 10 days, then cefixime 200 mg twice daily) were prescribed without improvement.

1.3. Clinical examination

Bilateral pulmonary condensation syndrome, flu-like symptoms and fever were observed.

1.4. Diagnostic hypotheses

In view of the clinical picture and the patient's condition, the following diagnostic hypotheses were considered:

- Pulmonary tuberculosis
- Bronchiectasis
- Invasive pulmonary aspergillosis
- Necrotizing pneumonia
- Bronchopulmonary cancer

1.5. Additional tests

- Chest X-ray: signs of interstitial pneumonia
- Complete blood count, CRP: no notable abnormalities
- GeneXpert sputum test: negative
- Chest CT scan: multiple centrilobular micronodules in a ‘tree-in-bud’ pattern
- Aspergillus PCR on BAL: positive

1.6. Diagnosis

Invasive pulmonary aspergillosis.

1.7. Management

Voriconazole 200 mg orally twice daily from day 1 to day 3, then 100 mg twice daily for a planned duration of 12 weeks, combined with continued metformin. Clinical progress was favorable, with gradual resolution of fever and radiological improvement.

2. Discussion

This case illustrates the importance of broadening the diagnostic scope when faced with antibiotic-resistant febrile pneumonia in a diabetic patient. Although diabetes is not a major immunodeficiency, it impairs neutrophil function and promotes the occurrence of opportunistic fungal infections, including invasive aspergillosis.

The ‘budding tree’ chest imaging and persistent fever pointed to a non-bacterial etiology. The diagnosis was confirmed by the detection of Aspergillus antigen and Aspergillus PCR on BAL, considered to be sensitive tools for the diagnosis of invasive aspergillosis.

The standard treatment is based on voriconazole, which has been shown to be effective in invasive forms. The recommended duration varies between 6 and 12 weeks depending on the clinical and radiological response. In our case, a 12-week treatment was initiated. [5,6],[8], [1,9,10].

3. Conclusion

Invasive pulmonary aspergillosis can occur outside the classic contexts of immunosuppression. Diabetes is a significant risk factor. The diagnosis should be considered in any case of antibiotic-resistant febrile pneumonia, in order to allow early treatment with specific antifungal agents and improve the prognosis.

Compliance with ethical standards

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Patterson TF, Thompson GR, Denning DW, Fishman JA, Hadley S, Herbrecht R, et al. Practice Guidelines for the Diagnosis and Management of Aspergillosis: 2016 Update by the Infectious Diseases Society of America. Clin Infect Dis. 2016;63(4):1–60.

[2] Latge JP, Chamilos Aspergillus fumigatus and aspergillosis in 2019. Clin Microbiol Rev. 2019;33(1):e00140-18.

[3] Kousha M, Tadi R, Soubani AO. Pulmonary aspergillosis: a clinical review. Eur Respir Rev. 2011;20(121):156–74.

[4] Kosmidis C, Denning DW. The clinical spectrum of pulmonary aspergillosis. Thorax. 2015;70(3):270–7.

[5] Chabi ML, Goracci A, Roche N, Paugam A, Lupo A, Revel MP. Pulmonary aspergillosis.Diagn Interv Imaging. 2015;96(5):435–42.

[6] Herbrecht R, Patterson TF, Slavin MA, Marchetti O, Maertens J, Johnson EM, et al. Application of the 2020 revised EORTC/MSGERC criteria for invasive fungal diseases to clinical trials of antifungal agents. Lancet Infect Dis. 2021;21(5):231–240.

[7] Denning DW, Cadranel J, Beigelman-Aubry C, Ader F, Chakrabarti A, Blot S et al. Chronic pulmonary aspergillosis: rationale and clinical guidelines for diagnosis and management. Eur Respir J. 2016;47(1):45–68.

[8] Lamoth F, Calandra T. Early diagnosis of invasive mould infections and disease. J Antimicrob Chemother. 2017;72(suppl_1):i19–i28.

[9] Taccone FS, Van den Abeele AM, Bulpa P, Misset B, Meersseman W, Cardoso T et al. Invasive Aspergillosis in Critically Ill Patients: Clinical Presentation, Diagnoses and Outcomes. Crit Care. 2015; 19:7.

[10] Roux A, Gonzalez F, Roux M, Mehrad M, Men7. Denning DW, Cadranel J, Beigelman-Aubry C, Ader F, Chakrabarti A, Blot S et al. Chronic pulmonary aspergillosis: Rationale and clinical guidelines for diagnosis and management. Eur Respir J. 2016;47(1):45–68