



Coccidioidomycosis in the Lungs Manifesting as Repeated Diabetic Ketoacidosis

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Abstract

This study presents a case of pulmonary coccidioidomycosis that manifested as recurrent episodes of diabetic ketoacidosis (DKA) in a patient with diabetes mellitus. Pulmonary coccidioidomycosis, caused by the fungus *Coccidioides* spp., is known to primarily affect the lungs and can lead to a wide range of clinical presentations, including respiratory symptoms and systemic manifestations. In this case, the patient's respiratory symptoms were initially attributed to underlying diabetes mellitus. However, further investigation revealed pulmonary coccidioidomycosis as the underlying cause. The association between coccidioidomycosis and DKA is not well documented, and this case highlights the importance of considering fungal infections as potential triggers for metabolic decompensation in patients with diabetes mellitus, particularly in endemic areas. Early recognition and appropriate management of pulmonary coccidioidomycosis are crucial to prevent complications and improve patient outcomes.

Keywords: Pulmonary; Coccidioidomycosis; Recurrent; Diabetic Ketoacidosis; Diabetes Mellitus; Respiratory

Introduction

Pulmonary coccidioidomycosis, caused by the fungus *Coccidioides* spp [1], is a fungal infection primarily affecting the lungs. It presents with a spectrum of clinical manifestations, ranging from asymptomatic to severe respiratory illness. Concurrently, diabetic ketoacidosis (DKA) is a life-threatening complication of diabetes mellitus characterized by hyperglycemia, ketosis, and metabolic acidosis. This introduction presents a unique case of pulmonary coccidioidomycosis masquerading as recurrent episodes of DKA in a patient with diabetes mellitus [2]. The association between coccidioidomycosis and DKA is not well-documented, highlighting the importance of considering fungal infections as potential triggers for metabolic decompensation in diabetic patients, particularly in endemic regions. This paper aims to elucidate the clinical presentation [3], diagnostic challenges, and management strategies associated with this uncommon presentation of pulmonary coccidioidomycosis.

Materials and Methods

This retrospective case study analyzed the medical records of a patient presenting with recurrent episodes of diabetic ketoacidosis (DKA) and subsequently diagnosed with pulmonary coccidioidomycosis [4,5]. Relevant clinical data, including demographic information, medical history, presenting symptoms, laboratory results, imaging findings, and treatment modalities, were collected and analyzed. Diagnostic criteria for DKA and pulmonary coccidioidomycosis were based on established guidelines and diagnostic criteria. The management approach [6], including antifungal therapy, insulin therapy, and supportive care, was documented. Additionally, information regarding the patient's response to treatment and clinical outcomes was evaluated. Ethical approval was obtained from the institutional review board for this study. Data were analyzed descriptively, focusing on clinical presentation, diagnostic workup, and treatment outcomes.

Results and Discussion

The patient [7,8], a 52-year-old male with a history of diabetes mellitus type 2, presented with recurrent episodes of diabetic ketoacidosis (DKA) characterized by hyperglycemia, ketosis, and metabolic acidosis. Despite appropriate insulin therapy and fluid

resuscitation, he experienced multiple episodes of DKA within a short timeframe. Diagnostic evaluation revealed pulmonary coccidioidomycosis as the underlying cause of the patient's respiratory symptoms and recurrent DKA. Imaging studies, including chest X-ray and computed tomography (CT) scan, demonstrated characteristic findings of coccidioidal pneumonia, such as pulmonary nodules and cavitations. Serological testing confirmed the diagnosis, showing elevated titers of coccidioidal antibodies. The patient was initiated on antifungal therapy with oral fluconazole, and insulin therapy was optimized to achieve glycemic control. Subsequent monitoring showed resolution of respiratory symptoms, improvement in radiographic findings, and normalization of coccidioidal antibody titers. This case highlights the diagnostic challenge of distinguishing between pulmonary coccidioidomycosis and diabetic ketoacidosis (DKA) in patients with diabetes mellitus presenting with respiratory symptoms. The overlapping clinical manifestations, such as fever, cough, and dyspnea, can lead to a delayed diagnosis of fungal infection, particularly in endemic areas where coccidioidomycosis is prevalent.

The association between pulmonary coccidioidomycosis and recurrent DKA is rare and not well-documented in the literature. It is hypothesized that the inflammatory response triggered by fungal infection may exacerbate insulin resistance and promote metabolic decompensation in diabetic patients [9]. Moreover, the systemic effects of coccidioidomycosis, including cytokine release and immune dysregulation, may contribute to metabolic disturbances and insulin requirements. Early recognition and prompt initiation of antifungal therapy are essential for improving outcomes in patients with pulmonary coccidioidomycosis presenting with recurrent DKA [10]. Close monitoring of glycemic control and respiratory status is

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warranted to prevent complications and ensure optimal management of both conditions. In conclusion, this case underscores the importance of considering fungal infections as potential triggers for metabolic decompensation in diabetic patients presenting with respiratory symptoms. Clinicians should maintain a high index of suspicion for pulmonary coccidioidomycosis in endemic regions and promptly initiate appropriate diagnostic and therapeutic interventions to improve patient outcomes.

Conclusion

In conclusion, this case highlights the importance of recognizing pulmonary coccidioidomycosis as a potential underlying cause of recurrent diabetic ketoacidosis (DKA) in patients with diabetes mellitus. The overlapping clinical manifestations between these two conditions can pose diagnostic challenges, particularly in endemic regions where coccidioidomycosis is prevalent. Early identification of pulmonary coccidioidomycosis is crucial for timely initiation of antifungal therapy and prevention of further metabolic decompensation in diabetic patients. Clinicians should maintain a high index of suspicion for fungal infections in diabetic patients presenting with respiratory symptoms, especially in areas where coccidioidomycosis is endemic. Furthermore, this case underscores the importance of multidisciplinary collaboration between infectious disease specialists, pulmonologists, and endocrinologists in the management of complex cases involving concurrent fungal infections and metabolic disorders. Overall, raising awareness of the association between pulmonary coccidioidomycosis and recurrent DKA is essential for improving diagnostic accuracy and optimizing patient outcomes. Further research is warranted to elucidate the pathophysiological mechanisms underlying this association and to develop evidence-based guidelines for the management of such cases.

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Conflict of Interest

None

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