

Air Crescent Sign in Pulmonary Aspergilloma in Patient of Acute Kidney Injury

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Abstract: This case study presents a unique clinical scenario of a 42-year-old patient with Type 2 Diabetes Mellitus T2DM, uncontrolled hyperglycemia, and recent Hepatitis B Virus diagnosis, who developed severe respiratory and renal complications. The patient's symptoms include fever, cough, shortness of breath, and decreased urine output, leading to the diagnosis of lower respiratory tract infection, acute kidney injury, and septicemia. A notable finding was the presence of an oval-shaped fungal ball in the right lungs middle lobe, identified as aspergilloma, confirmed by sputum KOH mount and fungal culture. This case was further complicated by the rare occurrence of the Air Crescent Sign on a CT chest scan, indicative of aspergilloma but also associated with other serious pulmonary conditions. The patients' successful recovery following intensive care, intravenous antibiotics, and stringent glycaemic control underscores the importance of prompt and comprehensive management in complex cases involving concurrent infectious and non-infectious diseases. This case highlights the significance of recognizing rare radiological signs for timely intervention, particularly for clinicians and nephrologists managing patients with overlapping endocrinological and infectious pathologies.

Keywords: Aspergilloma, Air Crescent Sign, Type 2 Diabetes Mellitus, Acute Kidney Injury, Hepatitis B Virus

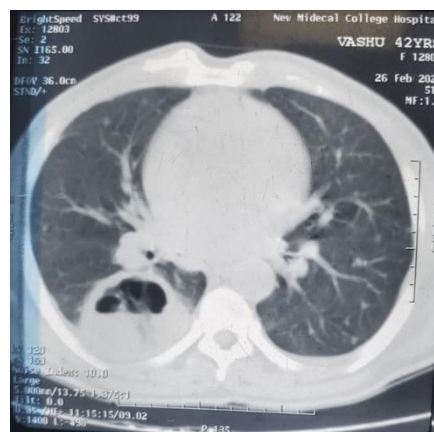
1. Case Report

A 42-year-old patient known case of T2DM with uncontrolled hyperglycaemia, and recently diagnosed Hepatitis B Virus+ presented with complaints of fever, cough, shortness of breath for last 7 days and decreased urine output for the last 2 days. After initial work-up patient was diagnosed with lower respiratory tract infection and Acute kidney injury with septicemia.

CT chest scan revealed an oval shaped fungal ball in middle lobe of right lung, for which sputum KOH mount and fungal culture was sent and their result were suggested of aspergilloma. Also, the lesion in CT chest was separated from the wall of the cavity by a crescent-shaped airspace; it is known as an 'Air Crescent Sign'. This finding is typical of Aspergilloma, but is also found in pulmonary tuberculosis, hydatid cyst, pulmonary abscess, bronchogenic carcinoma and Pneumocystis carinii pneumonia.

The patient was managed with ICU care, IV antibiotics, hydration, good glycaemic control and other supportive measures and he responded very well to this treatment plan. He was discharged in 2 weeks and on discharging the creatinine levels improved from 6.7 to 4 mg/dl which subsequently came down to 2.1 mg/dl after four weeks in the follow up period. Now, the patient is in regular follow-up and has good glycaemic control. A close monitoring is being done in each follow up for appearance of new signs/symptoms suggesting relapse of respiratory infections along with radiological and lab investigations.

As this clinical picture of CLASSICAL AIR CRESCENT SIGN, seen on CHEST CT SCAN in pulmonary aspergillosis is a very rare entity for clinicians/ nephrologists, so by foretelling this will facilitate a fast treatment of their patients.



HR-CT scan of chest showing irregular shape, thick wall cavity with oval shape mass. A crescent-shaped airspace separates the mass from cavity wall, known as air crescent sign.



Chest X-ray, depicting the lesion in the lung

2. Conclusion

This case study emphasizes the critical nature of recognizing rare radiological signs, such as the Air Crescent Sign in pulmonary aspergilloma, especially in patients with complex medical backgrounds like T2DM and Hepatitis B. The patient's remarkable recovery, facilitated by an integrated

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treatment approach involving intensive care, targeted antibiotics, strict glycemic control, and regular follow-ups, highlights the necessity of a comprehensive and multidisciplinary approach in managing such intricate cases. It serves as a pivotal example for clinicians and nephrologists, demonstrating the importance of early detection and prompt treatment in patients presenting with overlapping infectious and non-infectious conditions. The ongoing monitoring and management of this patient underscore the long-term commitment required in handling similar cases, ensuring the prevention of relapse and continuous improvement in the patient's health status.

References

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