IOCCM 2025 Conference

The 3rd International Online Conference on Clinical Medicine

17-19 November 2025 | Online

MDPI

Pulmonary Aspergillosis in a Patient with Diabetic Ketoacidosis

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INTRODUCTION & AIM

- **Pulmonary mucormycosis** is a potential complication in patients with **diabetic ketoacidosis**.
- Isolation of **filamentous fungus** from bronchoscopy specimens of this population may prompt clinicians to include pulmonary mucormycosis in their differential diagnoses and initiate **high-dose intravenous liposomal amphotericin (>5 mg/kg/day).**
- **Amphotericin** is an expensive therapy and is frequently associated with **adverse effects** such as nephrotoxicity, phlebitis, and acute febrile reaction.
- We encountered a case in which **pulmonary aspergillosis** rather than mucormycosis was diagnosed in a patient with diabetic ketoacidosis.

METHOD

- A 36-year-old female with history of **type 1 diabetes** was admitted to an intensive care unit due to **increased work of breathing** and decreased Glasgow coma scale (14).
- She presented with a temperature of 33.4 Celsius, glucose 39 mmol/L, beta-hydroxybutyrate 11.4 mmol/L, and blood gas of pH 6.94, bicarbonate 5 mmol/L, carbon dioxide partial pressure 24, and lactate 1.6 mmol/L.
- **Computed tomography** showed extensive parenchymal disease with reticulation and air space opacity and well circumscribed nodules distributed throughout the lungs (largest 14 mm) (**Figure 1**).
- **Bronchoalveolar lavage** specimens were sent to the microbiology laboratory, where heavy growth of filamentous fungus was identified on culture plates (**Figure 2**).

Figure 1: Computed tomography showed extensive parenchymal disease with reticulation and air space opacity and well circumscribed nodules distributed throughout the lungs.

RESULTS & DISCUSSION

- The fungus isolates were examined under 400x magnification with lactophenol blue stain and identified as ***Aspergillus nigers*** (**Figure 3**) and ***Aspergillus flavus*** (**Figure 4**).
- The patient was given 200 mg intravenous **voriconazole** every 12 hours, a first-line therapy for aspergillosis.
- She achieved clinical improvement and was later discharged home.

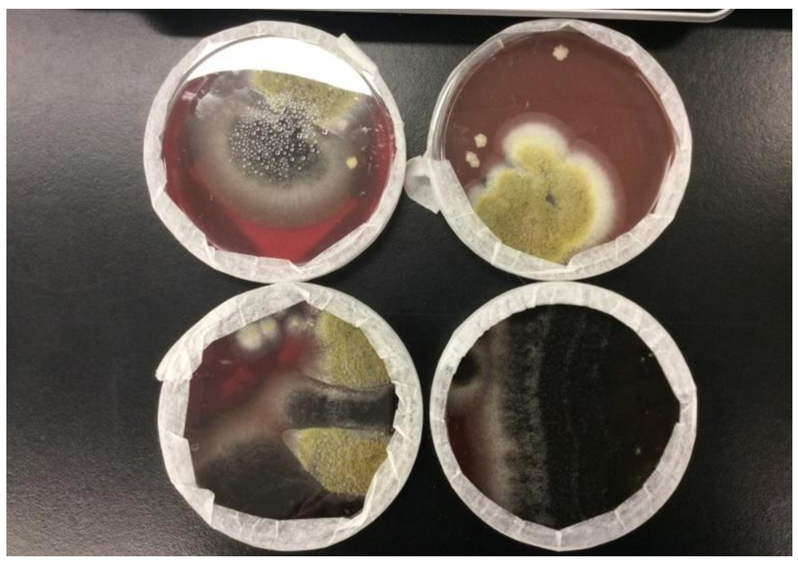

Figure 2: Culture of bronchoalveolar lavage specimens showed heavy growth of filamentous fungus.

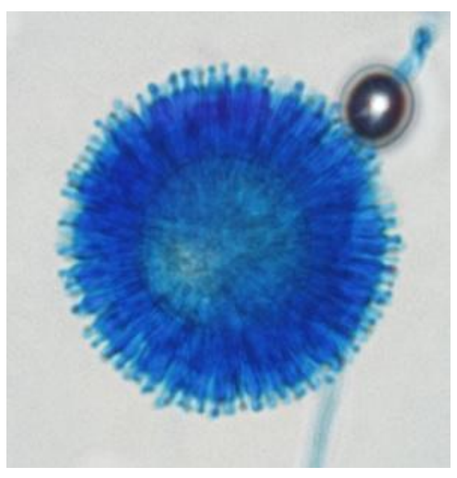

Figure 3: *Aspergillus nigers* (400X magnification with microscopy)

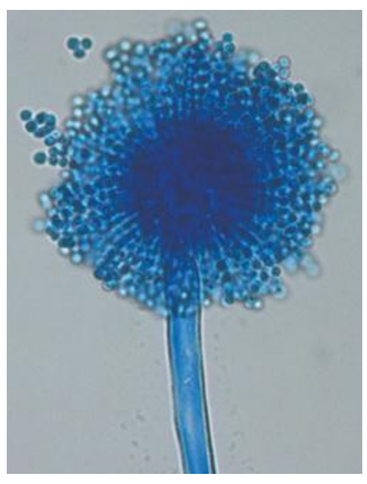

Figure 4: *Aspergillus flavus* (400X magnification with microscopy)

CONCLUSION

- Like pulmonary mucormycosis, pulmonary aspergillosis could happen in patients with diabetic ketoacidosis and should be kept in the differentials.
- The **first-choice therapy differs** for pulmonary mucormycosis and aspergillosis.

FUTURE WORK / REFERENCES

- Patterson TF *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):e1-e60. doi: 10.1093/cid/ciw326.