

# *Aspergillus rhinosinusitis* among patients with COVID-19, northeastern Iran

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## Introduction

Invasive aspergillosis (IA) is one of the most common opportunistic fungal diseases with underlying immunodeficiencies, especially those with hematopoietic stem cell transplantation (HSCT), patients with hematological malignancies. IA rhinosinusitis can be a life-threatening opportunistic infection that occurs predominantly in immunocompromised individuals and is caused by various *Aspergillus* species. The concurrence IA with other infections such as COVID-19 can disrupt the treatment and control of the infection. In this study, *Aspergillus rhinosinusitis* was detected using sinus biopsy specimens among COVID-19 patients, northeastern Iran.

## Methods

During an eight-month period, in two tertiary referral hospitals, 71 patients with rhinosinusitis (88 specimens) affected to COVID-19 with suspicion of fungal infections were evaluated. The sinus biopsy specimens were examined using mycological procedures and histopathology. The sinus specimens were examined by direct wet mounts with 20% potassium hydroxide (KOH) and cultured on Sabouraud dextrose agar. The cultures were then examined and evaluated to identify.

## Results

The specimens showed mycelium with septate (septate hyphae) in direct

experiments of 12 (13.6%) cases, positive culture for *Flavi* section 10 (77%) and *Nigri* section 3 (23%) in 13 (14.8%) cases, and positive histopathology results in 2 (2.27%) cases (10 specimens without histopathology examination). Of the 71 patients, 14 (19.7%) showed *Aspergillus rhinosinusitis* that 11 (15.5%) cases of them had *diabetes mellitus*, and 2 (10.5%) them died.

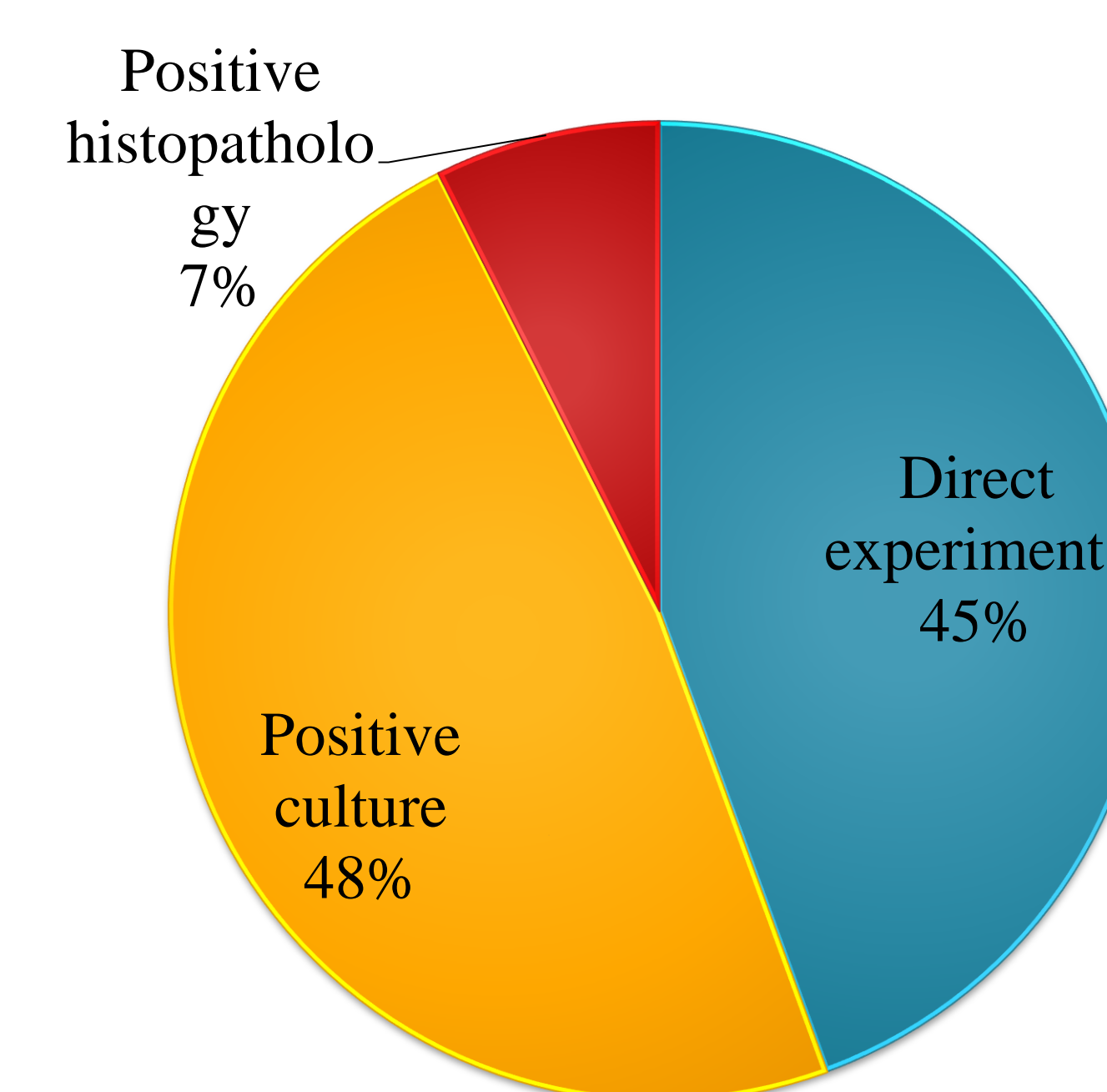


Fig. 1. Frequency of laboratory tests in COVID-19 patients with aspergillosis

## Conclusion

*Aspergillus rhinosinusitis* had a high incidence among COVID-19 patients, with a relatively high rate of

diabetes mellitus. Mycological examination results showed a weak correlation with histopathology results. Most of these patients received amphotericin B liposomal and caspofungin, but no significant difference was observed between recovery and death. A multidisciplinary approach is essential to improve the conditions facilitating the emergence of COVID-19-associated IA.

## References

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