



# Utility of aspiration cytology in mixed infection of Aspergillus and Mucor in oculo-rhino-cerebral mycosis: A Case Series



Monika Kalyan, Monika Garg, Amrinder Kaur, Ramesh Kumar Kundal

Department of Pathology, Government Medical College, Patiala, Punjab, India

## Introduction

Mycotic infections of the paranasal sinuses are on the rise globally. They are common in north India and are now being recognized in other parts of India as well [1, 2]. The spectrum of fungal diseases of the paranasal sinuses ranges from allergic sinusitis to invasive disease (fungal rhinosinusitis). Opportunistic fungal infection can be life-threatening in the presence of immunosuppression or uncontrolled diabetes mellitus due to their invasive potential. Mucormycosis of oculo-rhino-cerebral is an uncommon rapidly spreading invasive fungal infection and is life-threatening with a mortality rate nearing 50%. Its co-existence with aspergillus and candida makes it more uncommon.[3]

Early diagnosis is important as the lesions may be rapidly progressive and destructive and may even be fatal. These lesions can mimic malignancy clinically and on radiology. Fine needle aspiration (FNA) can be used for diagnosis of fungal aetiology in rhino-sinusoidal inflammation. In literature, there are only a few case reports which describe the diagnosis of rhino-sinusoidal mycoses on cytology [4–6]. We present two such cases diagnosed on FNA.

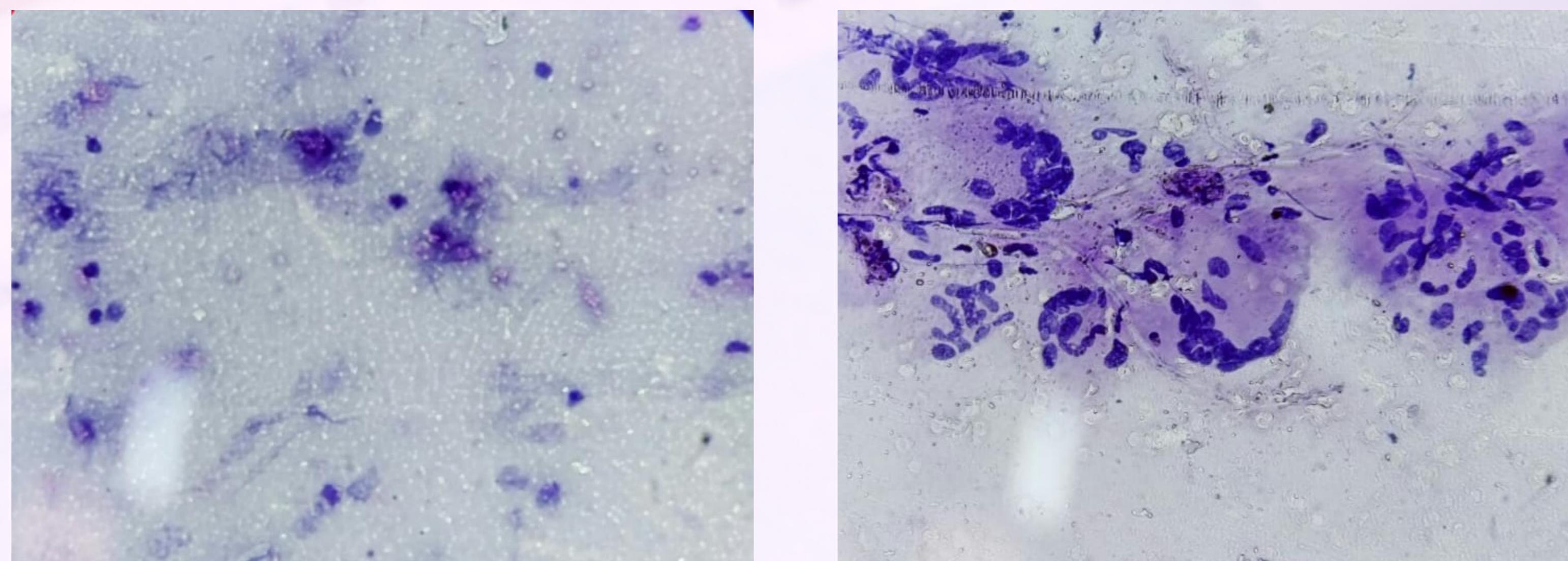
## Cases

We present a case of 27-year-old non-diabetic male presented with swelling in the left lower lid along with watery discharge for 9 months. Contrast-enhanced computed tomography Paranasal sinuses (PNS) in this case suggestive of mass involving left ethmoid, maxillary sinus eroding lamina papyracea of left orbit considered of clinically as malignancy, inverted papilloma, an invasive fungal disease.

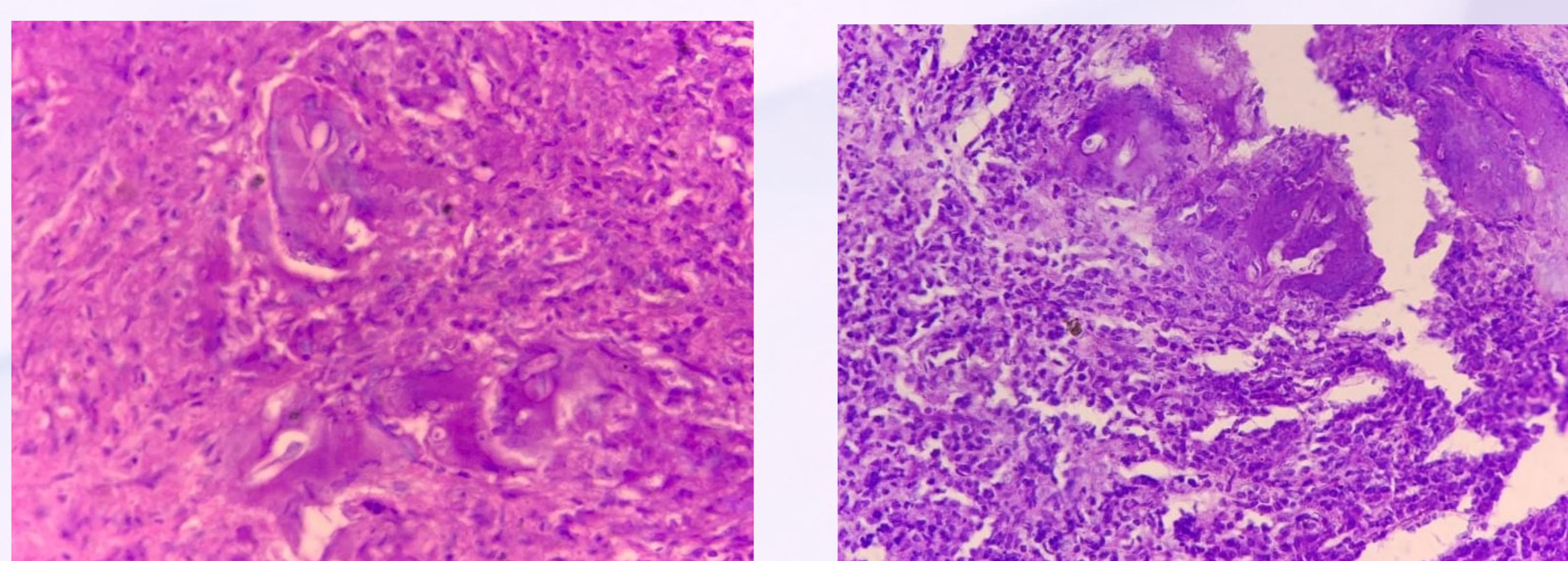
The second case is of 35-year male of rhinocerebral aspergillosis non-diabetic presented with swelling on the right side of cheek since last 20 days. No complaint of fever, ear discharge, nasal bleeding.

Aspiration cytology was performed from the lesion in both the cases and thereafter endoscopically removed tissue sent for histopathological examination.

## Microscopy



On aspiration cytology from both the cases revealed inflammatory infiltrate along with abscesses, necrotic debris and hyphae of fungus. (H&E 400x)



In both cases, histopathological examination showed numerous giant cells and ill-formed granuloma with the presence of broad aseptate as well as septate hyphae with acute angle branching within the giant cell and inflammatory infiltrate consistent with mucormycosis and aspergillosis. (H&E 400x)

## Discussion

Here we have presented a rare combined infection of mucormycosis and aspergillosis in non-diabetes mellitus condition. Here we focussed on the usefulness of aspiration cytology in early diagnosis of fungal infection. Mucormycosis is an opportunistic suppurative infection which spreads by direct as well as hematogenous dissemination and is associated with vascular invasion resulting in thrombosis, embolism, and infarction. [7] The predisposing factors for mucormycosis are uncontrolled diabetes mellitus (particularly in patients having ketoacidosis), underlying malignancies, renal failure, organ transplant, long-term immunosuppressive therapy,

, and cirrhosis. [8] However, the existence of acidosis in large tissue damage by some trauma with some immunodepression may be the explanation for the development of this type of infection in a previously healthy individual.

Aspergillosis is a well-known fungal infection most commonly caused by *A. fumigatus*. If diagnosis and therapeutic interventions are delayed it may result in massive tissue destruction and, eventually death.

The current study assesses the role of pre-operative FNA for this purpose. FNA provided a reliable generic diagnosis of inflammation and sparse to moderate inflammatory infiltrate and foreign body giant cells with or without necrosis were seen in all cases. A specific diagnosis can be made when fungal profiles are identified. Moreover, fungal profiles are not stained well with routine stains and special stains like PAS necessary to highlight them. The hyphae take magenta colour on PAS. Demonstration of an inflammatory reaction determines that the organism represents true infection and not contamination.

This case report of combined aspergillosis and mucormycosis of the rhino-oculo-cerebral infection of importance because of its rarity and to help clinicians in early diagnosis and aggressive treatment as a combined fungal infection is more life-threatening as compared to single fungus infection.

## References

- Chakrabarti A, Sharma SC. Paranasal sinus mycoses. Indian J Chest Dis Allied Sci. 2000;42:293–304.
- Panda NK, Sharma SC, Chakrabarti A, Mann SBS. Paranasal sinus mycoses in north India. Mycoses. 1998;41:281–286.
- Cruickshank G, Vincent RD, Cherrick HM, Derby K. Rhinocerebral mucormycosis. J Am Dent Assoc 1977;95:1164–8.
- Sharma D, Mahajan N, Rao S, Khurana N, Jain S. Invasive maxillary aspergillosis masquerading as malignancy in two cases: utility of cytology as a rapid diagnostic tool. J Cytol. 2012;29:194–196.
- Kumar BS, Patro M, Mishra D, Bal A, Behera B, Sahoo S. Fine needle aspiration in aspergilloma of frontal sinus: a case report. Acta Cytol. 2008;52:500–504.
- Singh N, Siddharaju N, Kumar S, Muniraj F, Bakshi S, Gopalkrishnan S. Fine needle aspiration as an initial diagnostic modality in a clinically unsuspected case of invasive maxillary fungal sinusitis. Diagn Cytopathol. 2010;38:290–293.
- Alfano C, Chiummariello S, Dessy LA, Bistoni G, Scuderi N. Combined Mucormycosis and Aspergillosis of the Rhinocerebral Region. In Vivo 2006;20:311–15
- Yohai RA, Bullock JD, Aziz AA, Markert RJ. Survival factors in rhino-orbital-cerebral mucormycosis. Surv Ophthalmol 1994;39:3–22.