

# A Case Report of Dual Infection of Rhino-Orbital Mucormycosis and Scabies in a Diabetic Patient

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## ABSTRACT

Diabetes mellitus is an immunosuppressed condition and patients with this condition are more prone to bacterial, viral, fungal, and parasitic infections and infestations. Mucormycosis is one of the acute opportunistic infections seen in diabetic individuals which are the third most common angioinvasive disease. Scabies is an acute form of skin disease seen in immune-compromised patients like diabetic individuals and is caused by *Sarcoptes scabiei*.

Early identification, successful management, and prompt medical/surgical intervention reduce the morbidity and mortality associated with them.

Hereby we report a case of dual infection of mucormycosis and scabies in a diabetic individual.

**Keywords:** Rhino-Orbital mucormycosis, scabies, diabetic, Diabetes mellitus

## INTRODUCTION

Diabetes mellitus (DM) is one of the risk factors for mycotic infection with various manifestations such as oral candidiasis, skin infection, gastrointestinal infection, urogenital infection, diabetic foot, and nail infection. Amongst the fungi, mucormycosis is one of the major opportunistic fungal infections seen in diabetic individuals leading to rhino cerebral, pulmonary, and gastrointestinal mucormycosis [1]. Mucormycosis is also seen in other conditions like long-term steroid usage, malignancy, and transplant [2]. It progresses rapidly, invades the blood vessels leading to thrombosis and necrosis, with a mortality rate of 40-70% [3].

Scabies, a parasitic infestation of skin is caused by *Sarcoptes scabiei*. Transmission occurs by direct, prolonged skin-to-skin contact with an infested person. Scabies lesions can be seen in interdigital areas, wrist, axillae, groins, buttocks, genitals. Scabies can also present as crusted scabies in immunocompromised, elderly, or

disabled persons. These patients should receive quick treatment to prevent an outbreak. Crusted scabies is usually insidious in onset and can mimic seborrheic dermatitis, psoriasis, and eczema [4, 5].

Since uncontrolled diabetes is associated with a varied form of infections, here, we report a case of a diabetic patient with mucormycosis infested with *Sarcoptes scabiei* which was an incidental finding during the screening for fungal etiology in KOH wet mount.

## CASE PRESENTATION

A 54-year-old male presented to the ENT outpatient department (OPD) in a tertiary care hospital with a 3-day history of right eye pain, headache, and right upper and lower limb weakness. He had an existing disease of diabetes mellitus and hypertension for the last 10 years and was on treatment for the same.

Clinical examination revealed purulent discharge and minimal crusts in the right nasal cavity with right frontal ethmoid

tenderness. Clinical examination of the right eye revealed edema of the upper eyelid, ptosis, conjunctival chemosis, and congestion with restricted movements of the eye in superior and inferior quadrants. The vision was 6/36(P). The patient was febrile and his general random blood sugar (GRBS) was 300mg/dl. He was diagnosed to have acute lacunar infarct in the left high parietal region with right hemiparesis with diabetic ketoacidosis with suspected right fungal sinusitis and right orbital cellulitis.

For further evaluation, crusts taken from the right nasal cavity were sent to the

microbiology lab for evaluation of fungal etiology. The nasal crusts were dissolved in 40% potassium hydroxide (KOH) and examined under a light microscope.

KOH examination showed hyaline, aseptate hyphae, and a coincidental finding of a mite which was morphologically resembling *Sarcoptes scabiei* (Figure1, 2) and later confirmed as the same ectoparasite.

However, further evaluation of the patient and fungal culture was not possible as he went against medical advice.

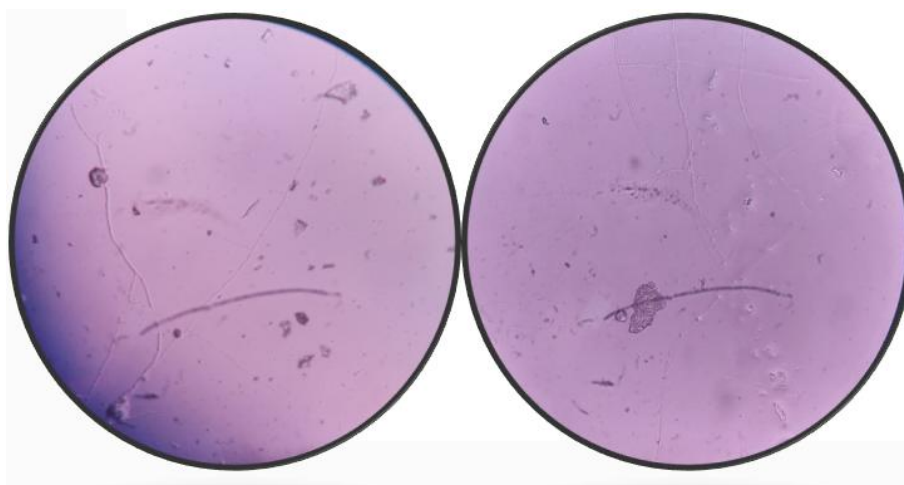


Figure 1: KOH mount of nasal crust (40x) showing hyaline, aseptate hyphae.

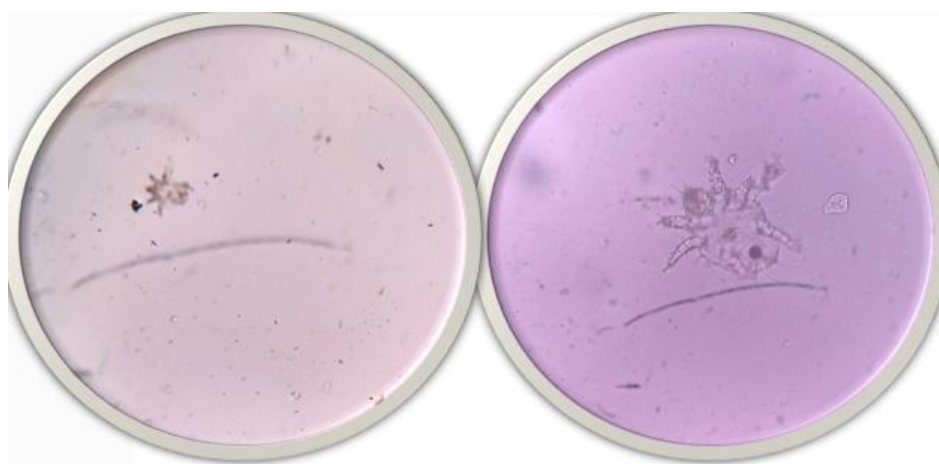


Figure 2(10x, 40x): KOH of nasal crust showing *Sarcoptes scabiei*

## DISCUSSION

Long-term DM patients have a phagocytic dysfunction due to neutropenia, ketoacidosis, low serum pH which reduce the activity of the inflammatory response predisposing a diabetic patient to bacterial, fungal, or parasitic infection. Several factors

like genetic susceptibility to infection, altered cell-mediated immunity, and antibody-mediated immunity, poor blood supply, nerve damage, and alteration in metabolism predispose a diabetic patient to various microbial infections [6].

Mucormycosis caused by Zygomycetes are ubiquitous filamentous, vasotropic fungi causing rhino cerebral, pulmonary, and disseminated forms of mucormycosis with necrotizing infection seen in around 36% of DM cases [6].

Co-infection of mucormycosis with bacteria like Mycobacterium tuberculosis and other fungal agents like Aspergillus, dimorphic fungi like Histoplasma, Blastomyces, and yeasts have also been reported. Dual infection of mucormycosis with scabies is rarely seen.

Usually, diagnosis of scabies can be done on clinical grounds or established by visualizing the mite, egg in the excrement on the mucosa, skin scrapings, or biopsy [7]. Particular attention should be paid to patients with scabies if they are undergoing immunosuppressive therapy or if they have conditions such as diabetes or HIV

Due to long-standing diabetes mellitus, there is an alteration in immune response leading to a decrease in sensory function and due to this reason patients with scabies may present with atypical symptoms wherein pruritus may not be evident as we observed in this case. Hence it was an incidental finding during the screening of the KOH mount.

## CONCLUSION

Hence, diabetic patients should be screened for a plethora of microorganisms including the ectoparasites which require aggressive treatment to contain the infection and prevent an outbreak. A high index of suspicion of fungal etiology is also required in patients with diabetes presenting with sinusitis or orbital cellulitis. The diagnosis should include clinical and microbiological or pathological investigations. The patient can be managed either surgically or conservatively with medical management or both.

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