



# EVALUATION of TWENTY EIGHT CASES of MUCORMYCOSIS

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## INTRODUCTION

Mucormycosis is a fungal infection caused by the members of the order *Mucorales* and has high mortality rate. Early diagnosis, elimination of concomitant predisposing condition, removal of infected tissue by surgical debridement, and appropriate antifungal therapy have substantial importance in the treatment of this disease that has high mortality. Although the present study aimed to retrospectively investigate the cases followed in our hospital for mucormycosis, it comprises the highest number of patients as compared to the studies conducted on this subjects until today in Turkey.

## MATERIALS AND METHODS

In the present study, 28 cases that were followed for mucormycosis between January 2002 and July 2013 in our hospital were retrospectively investigated. Definite diagnosis is made by positive growth in the culture and histopathological demonstration of hypha. The cases were evaluated in terms of demographic characteristics, concomitant diseases, laboratory and radiological findings, and clinical and therapeutic outcomes.

## RESULTS

- ✓ The present study evaluated a total of 28 mucormycosis cases. Demographic data, clinical form and therapeutic outcomes of the cases are demonstrated in **Table 1**.
- ✓ Signs and symptoms of the cases are demonstrated in **Table 2**.
- ✓ Radiological results of the cases are demonstrated in **Table 3**.
- ✓ It was determined that mycological culture was available in 24 cases with positive growth detected in 12; of which nine were *Mucor spp.* and three were *Mucorales* species.
- ✓ Histopathological examination of tissue samples obtained from 28 cases revealed thick, nonseptate hypha branching at right angle, which is consistent with mucormycosis.
- ✓ All cases underwent endoscopic sinus surgery and received systemic antifungal therapy (liposomal amphotericin B, 5 mg/kg/day via intravenous route).

## REFERENCES

1. Skiada A, Pagano L, Groll A, Zimmerli S, Dupont B, Lagrou K, Lass-Flori C, Bouza E, Klimko N, Gaustad P et al. Zygomycosis in Europe: Analysis of 230 cases accrued by the registry of the European Confederation of Medical Mycology (ECMM) Working Group on Zygomycosis between 2005 and 2007. Clin Microbiol Infect 2011; 17: 1859–67.
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**Table 1.** Demographic characteristics, clinical forms and therapeutic outcomes of the patients

	N (%)
Mean age	53.2 (12-81)
Gender (Female/Male)	11/17
Underlying disease/ Predisposing factors	
Diabetes mellitus (DM)	14 (50%)
CRJ+DM	4 (14%)
DM+hematological disease*	2 (7%)
Aplastic anemia+CHF	1 (4%)
Hematological disease**	3 (11%)
Renal transplantation	1(4%)
Steroid use	6 (21%)
Tooth extraction <sup>‡</sup>	3 (11%)
Clinical form	
Nasal	8 (29%)
Sinocerebral <sup>‡</sup>	19 (67%)
Disseminated	1(4%)
Atypical clinical involvement and complications	
Orbital apex syndrome (OAS)	13 (46%)
(OAS)+ Cavemous sinus+internal carotid artery involvement	3 (11%)
Generalized	1(4%)
Surgical procedure	28 (100%)
Exenteration	2 (7%)
Result	
Death	14 (50%)
Recovery with sequel	6 (21%)
Full recovery	8 (29%)

<sup>a</sup> Two patients had DM+CHF, one had DM

<sup>b</sup> Sinoorbital involvement in 12, sinoorbitocerebral involvement in 7 cases

\* Aplastic anemia

\*\* Acute myeloid leukemia, acute lymphocytic leukemia, multiple myeloma

\*\*\* Two patients had complete loss of vision and four patients had ophthalmoplegia

**Table 2.** Signs and symptoms of the cases

Signs/ Symptoms	N (%)
Fever	22 (79%)
Headache	20 (71%)
Loss of vision	13 (46%)
Facial pain	8 (29%)
Nasal congestion	7 (25%)
Periorbitalcellulitis	21 (75%)
Diplopia	7 (25%)
Altered consciousness	4 (14%)
Cranial nerve involvement	
Ptosis	18 (64%)
Ophthalmoplegia	16 (57%)
Mydriasis	16 (57%)
Facial paralysis	11 (39%)

**Table 3.** Radiological results of the cases

Radiological imaging method and pathological findings	N (%)
Computed tomography of the paranasal sinuses (93%) Swelling of the sinus mucosa	26 (100%)
Orbital MRI (57%) Periorbital muscle inflammation	11 (69%)
Cranial MRI (93%) Cavemous sinus involvement Brain infarction Internal carotid artery occlusion	7 (27%) 5 (19%) 3 (11%)

## CONCLUSIONS

In conclusion, the present study, different from other studies, revealed that the most common risk factor was diabetes mellitus rather than hematological malignancies and the disease presented with atypical clinical forms and complications (such as orbital apex syndrome, cavernous sinus thrombosis and internal carotid artery occlusion) although the most common type was rhinocerebral involvement (61%) (nasal: 8, sinoorbital: 12, rhinoorbitocerebral: 7). It was determined that treatment comprised surgical debridement and liposomal amphotericin B in all cases and subsequent pasiconazole therapy performed in 4 cases. Mucormycosis should be considered in the cases that have immunosuppressant factors, primarily the cases with diabetes mellitus, and that present with complaints of periorbital cellulitis, and it is quite important to immediately perform endoscopic sinus surgery for diagnostic and therapeutic purposes and to commence antifungal therapy.