

COVID-19 Associated Mucormycosis: An observational study from Iran

Farzad Pakdel ¹, Kazem Ahmadikia ², Mohammadreza Salehi ³, Azin Tabari ⁴, Aleksandra Barac ⁵, Sadegh Khodavaissy ^{2*}

¹Department of Oculo-Facial Plastic Surgery, Department of Ophthalmology, Farabi Hospital, Tehran University of Medical Sciences - Tehran (Iran, Islamic Republic of), ²Department of Medical Parasitology and Mycology, School of Public Health, Tehran University of Medical Sciences - Tehran (Iran, Islamic Republic of), ³Department of infectious diseases and Tropical Medicine, Imam Khomeini Hospital complex, Tehran University of Medical Sciences - Tehran (Iran, Islamic Republic of), ⁴Department of Otorhinolaryngology Research Center, Imam Khomeini Hospital complex, Tehran University of Medical Sciences - Tehran (Iran, Islamic Republic of), ⁵Clinic for Infectious and Tropical Diseases, Clinical Centre of Serbia, Faculty of Medicine, University of Belgrade - Belgrade (Serbia)

Background

Mucormycosis, a serious and rare fungal infection, has recently been reported in the patients with severe coronavirus disease (COVID-19) worldwide. There is a paucity of data regarding the rate of COVID-19 associated mucormycosis (CAM).¹⁵ To the best of our knowledge, the rate, clinical features and course of CAM in patients who simultaneously infected with COVID-19 has never reported before. We aimed to investigate the clinical features, temporal relationship to COVID-19, and course of patients with CAM.

Methods

A cross-sectional descriptive study on biopsy proven mucormycosis patients with laboratory confirmed COVID-19 was conducted with collaboration of five COVID-19 hospitalized centers in Tehran, Iran from April to September 2020. Clinical radiological investigations, operative and outpatient follow-up data were recorded and analyzed for possible predisposing factors, demographic profile, clinical features of COVID 19 and mucormycosis, complications and outcome.

Results

Fifteen patients with COVID-19 and rhino-orbital mucormycosis were included. Mean age of patients was 51.73±14.72 years and 66% were male. The mean interval time between COVID 19 disease and mucormycosis was seven days. The most common presentation was orbital apex syndrome (73%). Eight (53%) patients had cavernous sinus thrombosis. Among patients 13 (86%) had diabetes mellitus, seven (46.6 %) had received intravenous dexamethasone. Seven (47%) patients died from mucormycosis. Six (40%) received combined anti-fungal therapy and five patients (33%) underwent orbital exenteration. None of patients that received combined antifungal therapy died.

Comparison of demographic and clinical characteristics between survivors and non-survivors

Characteristic	Survivors 8 (%)	Non-survivors 7 (%)	p-value
Age (> 60 years)	2 (25)	2 (28.5)	0.876
Sex (male)	6 (75)	4 (57.1)	0.464
Diabetes Mellitus	7 (87.5)	6 (85.7)	0.919
Corticosteroid therapy	4 (50)	3 (42.8)	0.782
Chest CT scan severity (severe)	5 (62.5)	3 (42.8)	0.398
Anti-fungal combination therapy	6 (75)	0 (0)	0.003
Day of Mucormycosis Detection after COVID-19 (> 7)	5 (62.5)	2 (28.5)	0.189
ICU admission	3 (37.5)	3 (42.8)	0.464
O2 therapy (MV/NIV)	1 (12.5)	1 (14.2)	0.632

Conclusions

Clinicians should be more sensitive about mucormycosis during the first one to two weeks of COVID-19 in high-risk patients. Poor control of diabetes mellitus, corticosteroid therapy and severe pulmonary involvement during COVID-19 seem important predisposing factors. Systematic surveillance for CAM may be warranted in these.