



# COVID-19 associated rhino-orbito-cerebral mucormycosis, risk factors and outcome predictors; a multicentric study

Mohammad Taher Rajabi · Amirhossein Aghajani · Seyed Mohsen Rafizadeh · Mansooreh Jamshidian Tehrani · Seyedeh Zahra Poursayed Lazarjani · Mohammad Mohsen Keshmirshekan · Abbas Mohammadi · Abbas Akrami · Mohammad Mehdi Parandin · Mohammad Bagher Rajabi · Seyede Simindokht Hosseini · Maryam Akbari

Received: 7 May 2022 / Accepted: 15 September 2022  
© The Author(s), under exclusive licence to Springer Nature B.V. 2022

## Abstract

**Background** Since the onset of the Covid-19 pandemic, an increase in mucormycosis cases has been observed in many countries, including Iran. However, the role of covid-19 and associated risk factors have not been thoroughly investigated.

**Objective** This study is designed to identify epidemiologic characteristics, risk factors, and outcome

predictors of Covid-19-Associated Rhino-Orbito-Cerebral Mucormycosis (C-ROCM).

**Methods** Data of pathology proven Covid Associated ROCM cases were retrospectively obtained from 7 tertiary care centers throughout Iran from February 20, 2021, to July 22, 2021. Univariate and multivariate analyses were performed using binary logistic regression to assess the effects of various factors on the outcome.

**Results** A total of 132 patients with C-ROCM were included in the study. The mean age of patients was  $61.6 \pm 13.9$  (60.6% male). In 12 patients (9.1%), both eyes were involved. Diabetes was the most

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s10792-022-02536-7>.

M. T. Rajabi · A. Aghajani (✉) · S. M. Rafizadeh · M. Jamshidian Tehrani  
Farabi Comprehensive Center of Excellence in Ophthalmology, Department of Oculofacial Plastic and Orbital Surgery, Tehran University of Medical Sciences, Tehran, Iran  
e-mail: a-aghajani@razi.tums.ac.ir

S. Z. Poursayed Lazarjani  
Eye Research Center, Department of Eye, School of Medicine, Amiralmomenin Hospital, Guilan University of Medical Sciences, Rasht, Iran

M. M. Keshmirshekan  
Geriatric Ophthalmology Research Center, Shahid Sadoughi University of Medical Science, Yazd, Iran

A. Mohammadi  
Department of Ophthalmology, Farabi Comprehensive Center of Excellence in Ophthalmology, Tehran University of Medical Sciences, Tehran, Iran

A. Akrami · M. Akbari  
Department of Ophthalmology, Medical Microbiology Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

M. M. Parandin  
Department of Ophthalmology, School of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

M. B. Rajabi  
Department of Ophthalmology, Imam Khomeini Hospital Complex, Tehran, Iran

S. S. Hosseini  
Tarjomani Research Center, Tehran University of Medical Sciences, Tehran, Iran