Epidemic in pandemic: A battle in the war

Dear Editor,

It is our great pleasure to read an interesting article entitled, “Mucor in a Viral Land: A Tale of Two Pathogens,” by Sen et al. recently published in the Indian Journal of Ophthalmology. A few isolated case reports have also been described regarding rhino-orbital-mucormycosis. The authors have well-reported a series of six cases of Coronavirus Disease 2019 who developed rhino-orbital-mucormycosis, all known diabetics. Everyone had a history of systemic steroids at the time of COVID-19.

We would like to share our experience of an upsurge of 13 cases of rhino-orbital-cerebral-mucormycosis (ROCM) within 5 days in the last week of April 2021 to our hospital, diagnosed based on clinical, culture, and radiological ground. Three patients were concurrent COVID-19 positive, and the remaining 10 had a history of COVID-19 with a mean latent period of 11.3 days. The demographic details and clinical profile are mentioned in Table 1. The unique points about our cases are that only 3/13 (23.07%) were known cases of diabetes mellitus. The remaining six (46.15%) were newly diagnosed diabetics and all had a history of intravenous steroid (dexamethasone) use at the time of COVID-19. Recently, Sarkar et al. also reported a cluster of 10 cases of orbital mucormycosis—all were known diabetics. The newly diagnosed cases of diabetes in our series could be related to either history of intravenous steroid usage or missed diabetics; 8/13 (61.54%) had a history of oxygen use with only 2 requiring ventilator support. The use of steroids/broad-spectrum antibiotics/ventilatory support may increase the chances of opportunistic infections in an already compromised immunity in COVID-19. Bilateral presentation was seen in one patient.

All the patients received intravenous liposomal Amphotericin B. Eight required surgical intervention in the form of debridement/functional-endoscopic-sinus-surgery (FESS)/maxillectomy along with orbital exenteration done for 5 eyes.

| Case no. | Age/Sex | Diabetes mellitus status (HbA1c) | H/O Oxygen used | H/O Steroid use/mode | Vision (affected eye) at presentation | CRAO at presentation |
|----------|---------|---------------------------------|-----------------|----------------------|--------------------------------------|----------------------|
| 1        | 42/M    | Newly diagnosed (11.1)           | Yes             | Yes/IV               | 3/60                                 | No                   |
| 2        | 25/M    | No (5.2)                         | No              | No                   | No PL                                | No                   |
| 3        | 35/M    | Newly diagnosed (11.4)           | Yes             | Yes/IV               | 3/60                                 | No                   |
| 4        | 60/M    | No (5.6)                         | No              | No                   | PL +ve                               | No                   |
| 5        | 35/M    | Known diabetic (12.1)            | Yes             | Yes/IV               | 2/60                                 | No                   |
| 6        | 60/F    | No (6.1)                         | No              | No                   | No PL                                | No                   |
| 7        | 36/F    | Known diabetic (8.1)             | No              | Yes/IV               | 3/60                                 | No                   |
| 8        | 51/F    | Known diabetic (12.2)            | No              | No                   | 3/60                                 | No                   |
| 9        | 35/M    | Newly diagnosed (11.4)           | Yes             | Yes/IV               | No PL                                | No                   |
| 10       | 50/M    | Newly diagnosed (11.3)           | Yes             | Yes/IV               | No PL                                | No                   |
| 11       | 70/M    | No (5.5)                         | Yes             | Yes/IV               | 3/60, No PL                          | No                   |
| 12       | 58/F    | Newly diagnosed (12.2)           | Yes             | Yes/IV               | Finger count at 1/2 meters           | Yes                  |
| 13       | 37/M    | Newly diagnosed (7.2)            | Yes             | Yes/IV               | Finger count at 1/2 meters           | No                   |

M - Male, F - Female, IV - Intravenous, PL - Perception of light, CRAO - Central retinal artery occlusion.

| Case no. | KOH mount | Radiological diagnosis | Mode of management | Outcome |
|----------|-----------|------------------------|--------------------|---------|
| 1        | Positive  | Pansinusitis           | Medical            | Alive   |
| 2        | Positive  | Pansinusitis with orbital apex involvement | Surgical + Exenteration | Alive   |
| 3        | Positive  | Pansinusitis with extracranial involvement | Surgical | Alive   |
| 4        | Positive  | Maxillary sinusitis    | Surgical           | Alive   |
| 5        | Positive  | Maxillary & Ethmoid sinusitis | Medical | Alive   |
| 6        | Positive  | Pansinusitis with orbital apex involvement | Surgical + Exenteration | Alive   |
| 7        | Positive  | Maxillary & Ethmoid sinusitis | Medical | Alive   |
| 8        | Positive  | Maxillary sinusitis with extracranial involvement | Medical | Alive   |
| 9        | Positive  | Maxillary & Ethmoid sinusitis with orbital apex involvement | Surgical + Exenteration | Alive   |
| 10       | Positive  | Pansinusitis with orbital apex involvement | Surgical + Exenteration | Alive   |
| 11       | Positive  | Bilateral Pansinusitis with left orbital apex involvement | Bilateral Surgical + Left eye exenteration | Alive   |
| 12       | Positive  | Pansinusitis with intracranial ischemic foci | Surgical | Alive   |
| 13       | Positive  | Pansinusitis           | Medical            | Alive   |
(all no perception of light [PL]). One patient with bilateral involvement underwent bilateral FESS in the first sitting, followed by left-eye exenteration after 5 days [Table 2]. One patient had a permanent vision loss, who was already PL positive at presentation. Fortunately, no death has been reported so far. All patients were on liposomal Amphotericin B on the last follow-up. An epidemic of ROCM is still coming with more than 60 patients reported till now to us. It is a challenge to manage this fungal epidemic in the viral pandemic now when we are also short of our ‘Sanjeevani Booti,’ i.e. liposomal Amphotericin B.

Acknowledgments
We acknowledge department of ENT, Microbiology, Neurology, at All India Institute of Medical Sciences, Jodhpur.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

Jyoti Shakrawal, Kavita R Bhatnagar, Falguni Roy
Department of Ophthalmology, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India

Correspondence to: Dr. Jyoti Shakrawal, Assistant Professor, Department of Ophthalmology, All India Institute of Medical Sciences, Jodhpur - 342 005, Rajasthan, India. E-mail: jyotishakrawal@gmail.com

References
1. Sen M, Lahane S, Lahane TP, Parekh R, Honavar SG. Mucor in a viral land: A tale of two pathogens. Indian J Ophthalmol 2021;69:24452.
2. Mehta S, Pandey A. Rhinoorbital mucormycosis associated with COVID19. Cureus 2020;12:e10726.
3. Mekonnen ZK, Ashraf DC, Jankowski T, Grob SR, Vagefi MR, Kersten RC, et al. Acute invasive rhinoorbital mucormycosis in a patient with COVID19 associated acute respiratory distress syndrome. Ophthalmic Plast Reconstr Surg 2021;37:e40-80.
4. Sarkar S, Gokhale T, Choudhury SS, Deb AK. COVID19 and orbital mucormycosis. Indian J Ophthalmol 2021;69:1002-4.