Smartphone-assisted retinal evaluation in COVID-19 admitted patients

Dear Editor,

Recently, India has gone through the second wave of Coronavirus disease (COVID-19) pandemic. There has been a huge spike in the number of COVID-19 infected patients nationwide. Patients with comorbidities such as diabetes mellitus, hypertension, leukemias, and patients on immune-suppressants are more prone to develop COVID-19 infection. All these patients often need retinal evaluation by an ophthalmologist during their stay in the COVID-19 wards as many of them may have co-existing sight-threatening retinopathies. Additionally, during the second wave of the COVID-19 pandemic, rhino-orbital-cerebral mucormycosis (ROCM) cases also have emerged like an epidemic.[1] ROCM patients tend to develop retinal manifestations like central retinal artery occlusion, orbital infarction syndrome, disc edema, serous retinal detachment, etc.[2] They also need daily or alternate day fundus review to document the findings and prevent further sight-threatening complications.

As ophthalmologists, we have been performing our duties at the COVID-19 designated hospital at our institute since the initiation of the COVID-19 pandemic. We perform a retinal evaluation of COVID-19 infected patients admitted with other systemic co-morbidities like cerebral venous thrombosis (CVT), head injury to rule out papilledema, diabetes mellitus, hypertension, mucormycosis, etc.[3] Mucormycosis patients in the COVID-19 ward are reviewed by the ophthalmology residents on daily basis for monitoring disease progression, new retinal lesions, and response to treatment. All these cases often need a second opinion by a senior resident or retina specialist. To reduce the undue exposure in the COVID-19 wards, we have started performing smartphone-based retinal evaluation for all these patients. Retinal images are recorded with a video mode on, smartphone flashlight on, positioning a 20 diopter condensing lens coaxially to the phone and the patient's pupil. Junior residents posted in the COVID-19 wards are all trained to perform bedside retinal photography [Fig. 1] After recording the images, either the senior resident or the retina specialist are contacted via phone or email for expert opinion. This technique

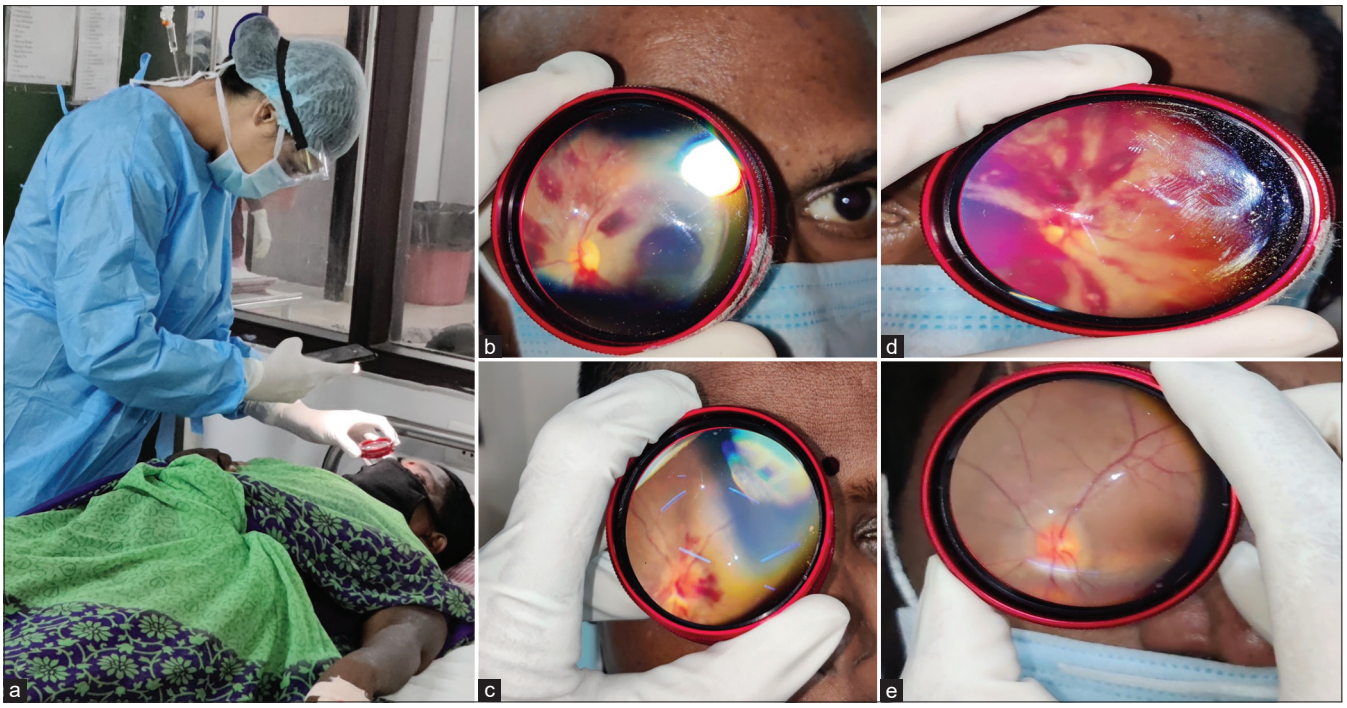

Figure 1: (a) Capturing fundus photography using smartphone; (b) and (d) RE and LE images of a patient with leukemia showing multiple superficial retinal hemorrhages, roth spots, and preretinal hemorrhages; (c) and (e) RE and LE images of a patient showing bilateral disc edema suggestive of papilledema

has been extremely beneficial for bedside documentation of the fundus findings, regular follow-up, and initiating ocular treatment at the earliest whenever indicated. Smartphone fundus photography is already being used in ophthalmology for different conditions.[4-6] We, hereby, advocate to use this simple and easily available technique for documenting retinal findings in patients admitted in the COVID-19 wards to facilitate early diagnosis and intervention, and to reduce unnecessary exposure.

Declaration of patient consent

Patient consent was obtained for the publication of images.

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Conflicts of interest

There are no conflicts of interest.

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