Rhino-orbital mucormycosis following severe COVID-19 infection

A 49-year-old man presented with complaints of left-sided nasal stuffiness, peri-orbital pain and double vision. He did not have any other systemic complaints and was non-pyretic. He was known to have hypertension and diabetes, for which he had been taking oral medication for nine years, controlled based on random blood sugar testing at home with a glucometer (range of 140 to 200 mg/dl).

The man had recovered from COVID-19 just three weeks earlier; he had developed pulmonary involvement due to COVID-19. His inflammatory markers were also raised. He was treated with intravenous methylprednisolone 40 mg daily for 5 days, followed by oral prednisolone in tapering doses for 15 days, for moderate to severe COVID-19 disease. During this phase of treatment with IV steroids, the patient’s blood sugar values were uncontrolled and he was prescribed insulin to improve blood sugar control. One week after completing the course of steroids, he presented to the ophthalmology clinic complaining of double vision.

On examination, the patient had mild proptosis of the left eye (Figure 1) and a diagnostic nasal endoscopy was suggestive of an eschar in the nostril over the middle turbinate. A contrast-enhanced MRI of the paranasal sinuses and the brain (Figure 2) demonstrated left ethmoid sinusitis (arrow) with a medial orbital abscess that was not taking up contrast (*). A diagnosis of post COVID-19 invasive fungal sinusitis with orbital involvement, presumed rhino-orbital mucormycosis, was made.

Question 1
What are the risk factors for invasive fungal sinusitis in this patient?

a. Recently recovered from COVID-19
b. Known hypertensive
c. Treated with IV steroids for COVID-19
d. Options a and c
e. All of the above

Question 2
Which tests and procedures would you perform next?

a. Complete ophthalmic examination
b. Fasting and postprandial blood sugar with HbA1C
c. Endoscopic endonasal sinus debridement with medial wall decompression and drainage of the medial orbital abscess
d. Send pus from the involved areas for microbiology and tissue specimens for histology
e. All of the above

Question 3
MRI imaging (Figure 2) is suggestive of ethmoid sinus haziness with a focal medial orbital abscess without contrast uptake. What would you do next?

a. Sinus debridement
b. Sinus and orbital debridement
c. Sinus and orbital debridement with local transcutaneous retrobulbar amphotericin B
d. Sinus and orbital debridement with local transcutaneous retrobulbar amphotericin B with intravenous liposomal amphotericin B (dose of 3-5 mg/kg body weight)