Case Report

Intricacy of Post Covid Mucormycosis leading to Garcin Syndrome

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SARS-CoV-2 causing COVID-19 pandemic is well known for causing various acute and chronic complications affecting almost all the organs of body with unusual presentations. Here we report a case of 50 years old man with Type 2 Diabetes Mellitus presented with gradual involvement of unilateral palsy of left side sided II, III, IV, V, VI, VII, VIII, IX & X without direct invasion into brain parenchyma after typical symptoms of Rhinorbital Mucormycosis.

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Key words **: Pandemic, Diabetes Mellitus, SARS-CoV-2, Mucormycosis, Garcin Syndrome.**

The 2019, Novel Coronavirus (2019-nCoV) or Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-C0V-2) first reported in Wuhan, Hubei province in China quickly spread to other parts of the world leading to pandemic[1]. A complex interplay of factors including pre-existing diseases, use of immunosuppressive therapy and systemic immune alterations by COVID-19 infection leads to secondary infections and complications. Poorly controlled Diabetes Mellitus with or without diabetic ketoacidosis, prolonged use of corticosteroids, illicit intravenous drug use, malnourishment, severe neutropenia, Malignant Haematological Disease and iron overload are the known predisposing factors leading to Mucormycosis[2]. Mucormycosis is an aggressive, rapidly progressive and life threatening fungal infection. A hallmark of Mucormycosis infection is presence of extensive angioinvasion with resultant vessel thrombosis and tissue necrosis resulting in rhinorbital involvement[3]. Globally, the incidence rate of Mucormycosis varies between 0.005 and 1.7 per million population. Prevalence of Mucormycosis in India is much higher than that of developed countries, which is around 140 per million population[4]. Garcin Syndrome is the progressive involvement of the Cranial Nerves resulting in near total unilateral Paralysis of Cranial Nerves, absence of sensory or motor tracts involvement and not associated with raised ICT. Guillain-Alajouanine-Garcin described this in 1926 as "Syndrome Paralytique Unilateral Global Des Nerfs Crannies," which consist of multiple Cranial Nerve Palsies (at least seven ipsilateral cranial nerves) without any evidence of long tracts signs or increased intracranial pressure[5]. Here we report a case of middle aged diabetic who developed Garcin syndrome as a complication of Post Covid Rhinocerebral mucormycosis.

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Editor's Comment :

- COVID-19 infection is not only limited to respiratory tract involvement, but rather involves most of the organs of body.
- It not only manifests acutely but also has an implication in subsequent period as well with protean manifestations, requiring special attention and care to address the morbidity associated with it.
- Garcin syndrome is one of such kind for which one should be aware of in those with Rhinorbital Mucormycosis.

Case Report

A 50 years old gentleman poorly controlled diabetic, presented with 1½ month history of being treated for COVID-19 with the symptoms of Fever, Sore Throat, Cough and Breathlessness and later on followed by pain and swelling over left side of face, with pain more in left preauricular region, and restriction of movements in the left eye and diminution of vision in left eye for 20 days. Patient was then hospitalised in ENT ward where Computerized Tomography of the Paranasal Sinus (CT PNS) had revealed left Rhinorbital Mucormycosis and subsequently Amphotericin-B was administered. Few days later patient developed insidious onset gradually progressive hoarseness of voice with nasal regurgitation of liquids, requiring nasogastric tube insertion.

Examination revealed fixed non-reactive pupils, ptosis and absence of extraocular movement of left eye with visual acuity of finger counting of 2 metre in right eye and perception of light in left eye and decreased sensation over left half of face and Lower Motor Neurons (LMN) type of left facial palsy, deviation of uvula to right and with absent gag reflex on left side with preserved XI and XII nerve.

Among the investigations done, MRI of brain revealed left orbital Rhinosinusitis with bony erosions and myositis with enhancing dura over the anterior left frontal lobe and involvement of left cavernous sinus and left optic nerve with inflammation in left parapharyngeal space (Figs 1-4) as evident by the hyperintensity in T2 / STIR images.

Cerebrospinal Fluid (CSF) examination revealed 2 cells, with no malignant cells seen, protein was 65mg/

dl, sugar was 96mg/dl and Adenosine Deaminase (ADA) was 3.9 U/L with gram's stain, z-n stain and India ink all being negative. KOH preparation did not show any fungal elements. Histopathological examination from the biopsy of the debrided mucosal tissue revealed Mucormycosis.

Patient was managed by doing endoscopic debridement of necrotic tissue followed by antifungals, antibiotics and other supportive measures, with good glycemic control and was discharged uneventfully on oral posaconazole after giving injectable Amphotericin B as per protocol.

Discussion

Our patient was diabetic with poor compliance to antidiabetic medications with history of steroid use for COVID-19 symptoms which further added to the pre-existing immunocompromised state.

Patients with Rhinocerebral Mucormycosis present with Fever, Headache, Nasal Discharge, Orbital Pain, with Decreased Vision, Facial Numbness and sometimes Blackish Secretions from nasal and oral cavity[6]. The involvement of CN III, IV, V, and VI is known due to extension of disease into the retro orbital region and cavernous sinus[7]. In our case, there was additional unilateral involvement of CN VII, IX and X as also reported by Kazuo, *et al*[8], Narayana, *et al*[9] and Nagendra, *et al*[10].

Our patient had similar involvement of the left sided II, III, IV, V, VI, VII, VIII, IX, X, XII as reported by Nagendra, *et*

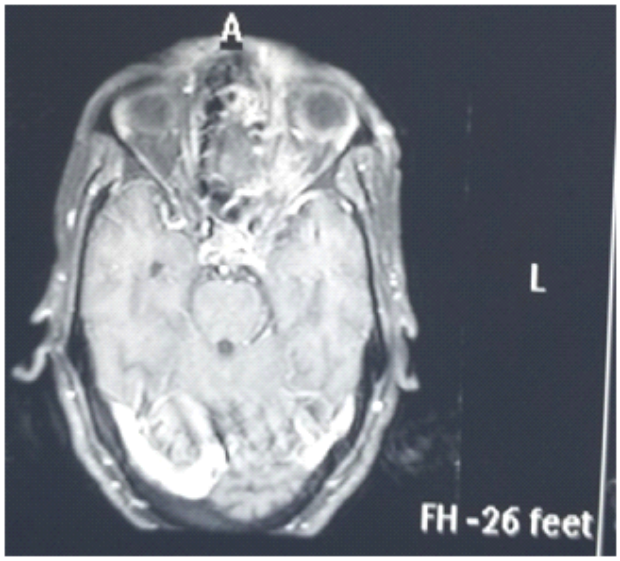

Fig 1 — Magnetic resonance imaging, Axial section demonstrating hyperintensity extending from Rihinorbital region into cavernous sinus

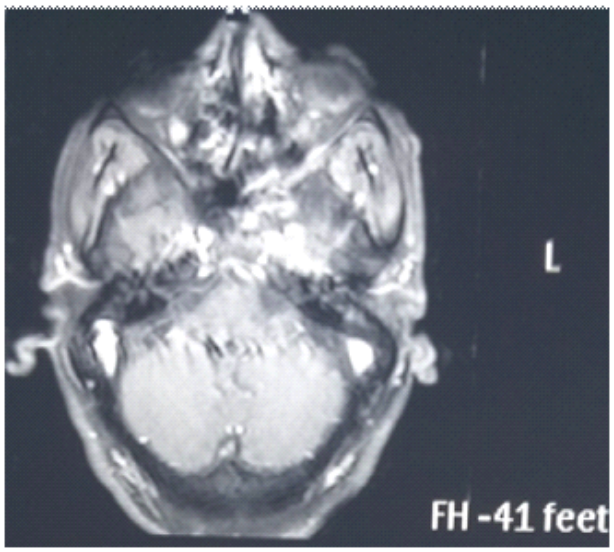

Fig 2 — Magnetic resonance imaging, Axial section demonstrating hyperintensity extending into base of skull, and left parapharyngeal space

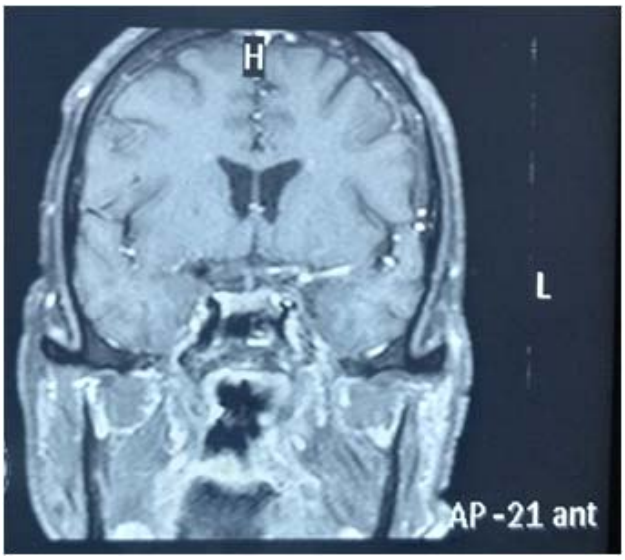

Fig 3 — Magnetic resonance imaging, Coronal section demonstrating hyperintensity extending into base of skull and left parapharyngeal space

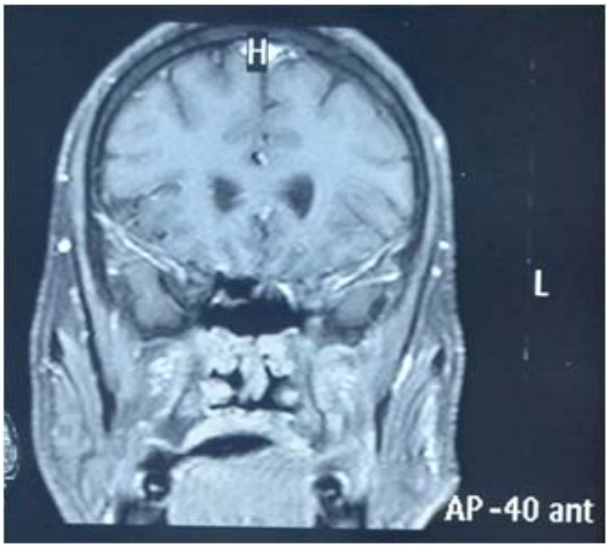

Fig 4 — Magnetic resonance imaging, Coronal section demonstrating hyperintensity extending into base of skull.

al[10]. The possibility of other causes leading to such multiple nerve palsies like neoplasms of posterior fossa, vascular malformations at the base of skull, trauma and brainstem infarct were ruled out. The MRI brain revealed the extension of infection to left cavernous sinus and left parapharyngeal space, resulting in LMN type of cranial palsies due to local invasion of nerve fibres by the infective pathology and associated neural and perineural edema as also reported by Nagendra, *et al*[10]. Mycelium growth along the cranial nerves or invasion of leptomeningeal blood vessels was reported by Narayana, *et al*[9] as the cause for involvement of unilateral cranial nerve[11].

Table 1 — *Investigations*

HB (g/dL)	TLC (10*3/µl)	Platelet (10*3/µl)	Urea (mg/dL)	S Creatinine (mg/dL)	S. bilirubin (mg/dL)	AST/ALT/SAP (IU/L)	Na+/K+/Cl- (mEQ/L)
11.4	11.25	351	16	0.6	1.0	32/35/100	136/3.5/98

CXR	ECG	HIV	HbsAg	Anti-HCV
Normal	Normal	Negative	Negative	Negative

Factors indicating poor prognosis are delay in diagnosis, delay in initiating treatment, hemiparesis or hemiplegia and bilateral involvement of sinuses orbit and palate, impaired renal function, Septic shock and immunocompromised status as reported by Nagendra, *et al*[6]. Our patient had developed hypokalemia, which is a known side effect of Amphotericin B therapy, which was corrected in time.

Conclusion

Rhinorbital Mucormycosis presenting as multiple Cranial Nerve Palsies, beyond cavernous sinuses is not seen commonly. A high suspicion should be kept for involvement of Lower Cranial Nerves in Rhinorbital Mucormycosis especially in immunocompromised patients, who can present as Garcin syndrome. As Rhinorbital Mucormycosis presenting as Garcin syndrome is a known entity even in pre-Covid era, especially in patients with immunocompromised status, so one should be vigilant about possibility of developing Garcin syndrome in patients with Mucormycosis. So that, early diagnosis and initiation of treatment can decrease the morbidity by preventing the spread of mucormycosis.

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