

Cerebral Malaria in A Patient with COVID-19

Sir,

A 64-year-old male, a native of Kochi, Kerala, who is a diabetic, was under quarantine after returning from Nigeria. He was asymptomatic on return but two days later, he was noted to have fever with cough. Patient tested positive for COVID-19 RT-PCR (nasopharyngeal swab). He was started on symptomatic therapy. A week later he deteriorated in sensorium, but had no headache, vomiting, seizures, or neck stiffness. His complete blood count revealed thrombocytopenia [12,000/mm³]. Dengue and Leptospira serology sent were negative. He was started on hydroxychloroquine 400 mg solitary dose followed by weekly doses of hydroxychloroquine 200 mg. A CT of the brain done was normal. Lumbar puncture was deferred in view of thrombocytopenia. He was diagnosed to have COVID-19 Encephalitis.

In view of persistent altered sensorium, he was referred to our center for further management. On arrival, he was drowsy, had no focal deficits or neck stiffness. He was admitted in the COVID Intensive Care Unit at our center.

Blood investigations revealed improving trend in thrombocytopenia [110 K/uL]. A repeat nasopharyngeal swab done for COVID-19 (RT-PCR) was positive. Serum Ferritin was elevated [2974 ng/mL]. MRI of the brain and CSF study done were normal.

In view of travel history to Nigeria, patient was tested for Malaria, where Rapid Malarial Antigen was positive. Peripheral Blood Smear was suggestive of anemia and presence of gametocyte and ring forms of *Plasmodium falciparum* were seen with Malarial Parasite Index of about 1%.

Patient was started on intravenous Artesunate 180 mg once daily for 3 days followed by oral artemolane (150 mg) and piperazine (750 mg) combination for 3 days. Smear for malarial parasite repeated after three days was again positive and a second course of intravenous artesunate was given. SARS-CoV2 RTPCR was negative and so was the peripheral blood smear for malarial parasite.

Patient improved in sensorium gradually and at the time of discharge, he was conscious and oriented with absent malarial parasite and normal blood counts.

Co-infection with COVID-19 is known to be in about 7% of the patients, with doubling the rate in ICU patients.^[1] Bacterial infections are known to be most common co-infections.

Altered consciousness in the form of confusion, delirium, deep coma is considered as the hallmark features of COVID encephalitis in a positive COVID patient.^[2] The presence of anosmia and aguesia helps in differentiating it from other encephalopathies. Neuroimaging features such as cortical and subcortical T2/FLAIR signal changes are MRI features of COVID encephalopathy.

Our patient had cerebral malaria as per WHO Criteria.^[3] Cerebral Malaria has a mortality of up to 50% if left untreated. Our patient mostly survived probably due to hydroxychloroquine intake. Not all patients with encephalopathy when positive for COVID-19 are encephalitis due to COVID-19 infection. Nigeria is a country where malaria is endemic and special importance is to be given to travel history in such a case.

Every suspected case of COVID Encephalitis has to be investigated for all possible causes of encephalitis as

co-infection. Not all encephalitis or encephalopathy in COVID-19 patients are due to SARS-CoV2 infection.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

1. Lansbury L, Lim B, Baskaran V, Lim WS. Co-infections in people with COVID-19: A systematic review and meta-analysis. *J Infect* 2020;81:266-75.
2. Ye M, Ren Y, Lv T. Encephalitis as a clinical manifestation of COVID-19. *Brain Behav Immun* 2020;88:945-6.
3. Misra UK, Kalita J, Prabhakar S, Chakravarty A, Kochar D, Nair PP. Cerebral malaria and bacterial meningitis. *Ann Indian Acad Neurol* 2011;14(Suppl 1):S35-9.

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