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SCIENTIFIC LETTER

COVID-19: Possible Cause of Induction of Relapse of *Plasmodium vivax* Infection

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To the Editor: In ongoing pandemic of novel corona virus disease (COVID-19), clinicians are observing atypical manifestations of the disease. We hereby report a case of COVID-19 co-infection with vivax malaria in a 10-y-old boy, who previously had received incomplete radical cure with primaquine for vivax infection, suggesting a possible role of COVID-19 in inducing current malarial relapse.

A 10-y-old boy, resident of Delhi, presented to the pediatric emergency department of a tertiary care hospital with history of high grade fever with chills and rigors, headache, cold, cough and pain abdomen. Past history revealed admission with a similar episode of febrile illness six months back. Medical records from previous admission revealed that he was diagnosed with *P. vivax* infection and had not completed primaquine therapy as per history. At presentation, child was febrile with fever of 104° F, maintained saturation of 97–98% on room air. Rest of systemic examination was normal. Investigations revealed Hb of 11.7/dl, total leucocyte count (TLC) of 4500/mm^3 with 15% neutrophils, 53% lymphocytes and 28% eosinophils (absolute eosinophil count of 1260/mm^3), and platelet count of 52,000/mm^3. Rapid diagnostic test for malaria was faintly positive for pan antigen and smear examination showed all stages of *Plasmodium vivax* (*P. vivax*), confirming it to be malaria. Nasal and pharyngeal swabs RT-PCR for corona virus 2 (SARS-CoV-2) were positive. Other investigations were normal.

The child was admitted and treated for malaria and supportive care for COVID-19 infection [1]. Primaquine eradication therapy was given for 14 d after ruling out G6PD deficiency. He was discharged after complete recovery.

This boy had been diagnosed with *P. vivax* infection six months back and had now reactivation of malaria. Relapse rates after *P. vivax* infection vary geographically from 8 to 80%, with considerable proportion of population harboring dormant but activatable hypnozoites in endemic areas [2]. Exact mechanism causing this activation is though unclear, associated cytokine response with systemic illness has been postulated in *P vivax* relapse [3]. COVID-19 leads to a cytokine storm, which is responsible for the more severe manifestations of the disease [4, 5]. Hence, we postulate that the COVID-19 infection, with its cytokine response was responsible for induction of *P. vivax* relapse in our patient. Our hypothesis is based on circumstantial evidence in form of documented malaria in past, a possibility of re-activation in natural course or re-infection cannot be ruled out.

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Compliance with Ethical Standards

Conflict of Interest None.

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