

## A case of SARS-CoV-2 and Plasmodium vivax co-infection

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During the coronavirus disease 2019 (COVID-19) pandemic, other infectious diseases have persisted, posing challenges in diagnosing concurrent infections alongside COVID-19 in a timely manner. Malaria exhibits similar symptoms and diagnostic characteristics to COVID-19, leading to delayed detection. We present a case of Plasmodium vivax infection in a patient who experienced persistent thrombocytopenia following severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. A 71-year-old female with hypertension presented with symptoms of cough and fever and tested positive for COVID-19. Following the May 2021 guidelines of the South Korea, she was admitted to an isolation ward. Chest X-ray revealed ground glass opacities and the patient received intravenous remdesivir for three days (200 mg initially, followed by 100 mg/day). Despite treatment, the symptoms persisted, and thrombocytopenia (52,000 / $\mu$ l) was confirmed, resulting in the patient's transfer to COVID-19 regional designated hospital. At the hospital, it was found that the patient required oxygen supplementation (2 L/min via nasal prongs), leading to the addition of intravenous dexamethasone (6 mg/day) and continuation of remdesivir for two more days. The patient reported no recent travel history. However, she resided in a malaria-endemic area in Gyeonggi Province, South Korea. Peripheral blood smear analysis confirmed the presence of P. vivax, which was further supported by positive Malaria Ag test and Malaria smear test results. The patient received a therapeutic dose of hydroxychloroquine (25 mg/kg for chloroquine base) over three days. Additionally, primaquine was prescribed for relapse prevention (15 mg/day) over a two-week period. A follow-up Malaria smear test conducted after three days of hydroxychloroquine treatment yielded a negative result, indicating successful treatment. The patient was hospitalized for 10 days to receive treatment for COVID-19 and malaria. As the patient's oxygen demand decreased and platelet levels returned to normal (202,000 / $\mu$ l), she was discharged with no symptoms, along with a prescription for primaquine. This case ensures a timely and accurate diagnosis of malaria.

