Ceftriaxone/levofloxacin/lopinavir/ritonavir

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Thrombocytopenia following off-label use: case report

A 54-year-old man developed severe thrombocytopenia during off-label treatment with ceftriaxone, levofloxacin and lopinavir/ritonavir for COVID-19 pneumonia.

The man in South Korea was diagnosed with diabetes mellitus and hypertension during the recent health check-up. He was not on any regular medications. On 19 February 2020 (day 1), he started experiencing headache. On the following day, he became febrile with myalgia and productive cough. He visited a screening centre for the COVID-19, where he tested positive for COVID-19 on 22 February 2020 (day 4). On 23 February 2020 (day 5), he was admitted for the treatment of COVID-19. Based on subsequent findings of chest x-ray, he was diagnosed with COVID-19 pneumonia. He started receiving off-label treatment with oral hydroxychloroquine 400mg once a day. Due to persistent fever, headache and worsening infiltration on chest x-ray, his COVID-19 treatment was changed to oral lopinavir/ritonavir 400/100mg twice per day and IV ceftriaxone 2g every 24 hours on 26 February 2020 (day 8). On 28 February 2020 (day 10), chest x-ray findings persisted. Consequently, IV levofloxacin 750mg every 24 hours was added. During this time, his complete blood count (CBC) revealed WBC count of 7510 /mm^3, platelet count of 13 5000 /mm^3 and haemoglobin of 14.9 g/dL. On 2 March 2020 (day 13), he started experiencing epistaxis (right nostril), gum bleeding and petechiae (both arms and legs). CBC revealed severe thrombocytopenia with WBC count of 5770 /mm3, platelet count of 2000 /mm3 and haemoglobin of 13.0 g/dL. Prothrombin time was 14.1 seconds, with INR of 1.21 (69.1%) and activated partial thromboplastin time 35.0 seconds. Because of high risk of critical bleeding, he was transferred to the tertiary care centre after transfusion of 10 units of platelet concentrate. After arriving to the tertiary care centre, his vital signs were stable, but he complained of nausea and headache. Close monitoring with no immediate imaging was decided, as he had no neurologic deficit and his headache persisted since the diagnosis of COVID-19 with no significant changes in the intensity. Follow-up CBC revealed platelet count of 3 8000 /mm^3. Pseudo-thrombocytopenia was excluded based on a peripheral blood smear. Following additional 6 units transfusion of platelet concentrates, an increase in platelet count to 11 3000 /mm^3 was observed on the next morning. After the review of laboratory tests, clinical course and prescriptions, drug-induced thrombocytopenia was suspected, which was attributed to ceftriaxone, levofloxacin and lopinavir/ritonavir.

The man's treatment with ceftriaxone, levofloxacin and lopinavir/ritonavir was discontinued. Thereafter, oral hydroxychloroquine 400mg once per day was restarted. His platelet count continued to increase without any additional transfusion. On 6 March 2020 (day 17), his symptoms improved. Hence, hydroxychloroquine was discontinued. On 9 March 2020 (day 20), COVID-19 virus was undetectable from upper respiratory tract specimen.

Nham E, et al. Severe thrombocytopenia in a patient with COVID-19. Infection and Chemotherapy 52: 410-414, No. 3, Sep 2020. Available from: URL: http://doi.org/10.3947/ic.2020.52.3.410