Multiple drugs

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Increased uric acid levels following off label use, decreased lymphocyte count and lack of efficacy: case report

An 8-month-old boy showed increased uric acid levels during off-label therapy with lopinavir/ritonavir for Covid-19 and experienced a persistent decrease in lymphocyte count during supportive therapy with methylprednisolone for poor peripheral circulation. Additionally, he did not respond to methylprednisolone, immune globulin and dopamine for the treatment of his poor peripheral circulation [*not all routes not stated; times to reactions onsets not clearly stated*].

The boy, who started coughing on 25 January 2020, was hospitalised on 31 January 2020. Subsequent investigations led to the diagnosis of Covid-19, with multiple complications, including poor peripheral circulation. His clinical condition was critical. Hence, he started receiving methylprednisolone 1.5 mg/kg twice a day on hospitalisation days 1–5 (illness days 7–11) and IV immune globulin 1 mg/kg/d on hospitalisation days 1–2 (illness days 7–8). He also received unspecified fluids and electrolytes, low-dose diuretics [*specific drugs not stated*] and dopamine to maintain his BP. However, in spite of these medications, his fever persisted, and he maintained a poor peripheral circulation. Therefore, on the evening of hospitalisation day 7 (illness day 13), he started receiving off-label lopinavir/ritonavir 12.5/3.125 mg/kg, twice daily. A second dose of IV immune globulin 1 mg/kg/d followed on hospitalisation days 8–9 (illness days 14–15), alongside methylprednisolone 2 mg/kg/d on hospitalisation days 8–14 (illness days 14–20 days, with tapering). He remained febrile on hospitalisation days 8 and 9, and also exhibited a decrease in lymphocyte count to 0.38×10^9/L. He received granulocyte colony-stimulating factor on hospitalisation days 4 and 10, for his neutrophil count. His fever started improving on hospitalisation day 10 (day 3 of lopinavir/ritonavir administration), accompanied by improvement in his BP. However, on day 7 of lopinavir/ritonavir administration, his uric acid levels increased to 934.79 mmol/L. By day 8 of lopinavir/ritonavir administration (hospitalisation day 15), he became afebrile and did not require ventilator support.

Lopinavir/ritonavir was subsequently discontinued. Three days following lopinavir/ritonavir discontinuation, the boy's uric acid levels normalised (hospitalisation day 19; illness day 25). Thereafter, he tested negative for coronavirus 2 (SARS-CoV-2). However, at the time of discharge, on 16 March 2020 (hospitalisation day 46; illness day 52), his lymphocyte count was 0.54×10^9/L. At this time, both, IgG and IgM antibody for SARSCoV-2 were found positive. On day 68 of the illness, his CD3+, CD4+ and CD8+ T-cell counts were still below normal. The percentage of CD3+CD4+CCR7–CD45RA– lymphocytes was 53.13% (in CD4+ T cells) in spite of sustained reduction of CD3+, CD4+ and CD8+ lymphocytes, and the ratio of Th1/Th2 was 0.31. Therefore, the persistent decrease in lymphocyte count (T-cells) was attributed to the treatment with methylprednisolone.

Qiu L, et al. A Case of Critically Ill Infant of Coronavirus Disease 2019 With Persistent Reduction of T Lymphocytes. Pediatric Infectious Disease Journal 39: e87-e90, No. 7, Jul 2020. Available from: URL: http://doi.org/10.1097/INF.0000000000002720

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