Mycophenolate mofetil/prednisone/tacrolimus

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COVID-19: 2 case reports

A 30-year-old man and a 58-year-old man developed COVID-19 during immunosuppressive treatment with tacrolimus, mycophenolate mofetil and prednisone [*not all routes stated, times to reactions onsets not stated*].

Case 1: A 30-year-old man presented to the nephrology department on 23 March 2020 with weakness and flank pain. Physical examination showed essential hypertension. He was diagnosed with chronic kidney disease one year before the presentation and had been receiving amlodipine for hypertension. He also had a history of gastro-oesophageal reflux. In view of chronic kidney disease, he underwent living-related kidney transplantation on 26 March 2020. His pre-operative antibody examination showed that he was positive for cytomegalovirus IgG. Subsequently, he started receiving immunosuppressive treatment with tacrolimus 8 mg/day, mycophenolate mofetil 2000 mg/day and prednisone 20 mg/day. His trough tacrolimus level was 10 ng/mL. Five days after the transplantation, he was discharged from the hospital with signs of a good recovery. Eighteen days after the transplantation, he re-presented to the emergency department with respiratory distress symptoms like dyspnoea, cough and chest pain. Due to the severity of his complaints, he was admitted to the ICU, and subsequently, a diagnosis of COVID-19 was confirmed. At ICU, he was tachycardic with rales in the left lung. The chest CT scan revealed ground-glass opacities with consolidation. His urine was brown, which indicated haemolysis. He also showed evidence of transplant rejection with the haemolytic-uraemic syndrome (HUS). Based on findings, a clinical diagnosis of multiorgan failure, haematologic insufficiency, sepsis and acute kidney insufficiency was made. His laboratory test results were as follows: CRP: 44.54 mg/L, blood urea nitrogen: 78 mg/dL, serum creatinine: 5.36 mg/dL, total bilirubin: 8.91 mg/dL, direct bilirubin 7.58 mg/dL and D-dimer: 1300 ng/mL. Hence, treatment with intravenous hydration was started, while therapy with tacrolimus was stopped. Treatment with mycophenolate mofetil was continued at a lower dose of 1000 mg/day, along with prednisone. He also received off-label treatment with favipiravir, hydroxychloroquine, methylprednisolone and oseltamivir for COVID-19. To control the progression of HUS, he received plasmapheresis and immune globulin. In spite of all efforts, he developed cardiac arrest on day 3 of ICU admission. Subsequently, cardiopulmonary resuscitation (CPR) was initiated; however, he did not respond to CPR, and after 45 minutes of CPR with no response, he was pronounced dead.

Case 2: A 58-year-old man, who had chronic glomerulonephritis, underwent a living-related kidney transplant on 20 March 2020 after two months of haemodialysis. He had a history of mild mitral and aortic valve insufficiency and hepatic steatorrhoea. Five days after the transplant, he was discharged from hospital. He had been receiving triple maintenance immunosuppressive therapy with oral tacrolimus 6 mg/day, mycophenolate mofetil 2000 mg/day and prednisone 20 mg/day. The tacrolimus trough level was 11 ng/mL. On 4 April 2020, he was hospitalised with myalgia and high-grade fever. At admission, he had leucopenia, lymphopenia and thrombocytosis. He also had elevated levels of acute-phase reactant and a mild elevation of CRP. His D-dimer levels also elevated. Laboratory test results were as follows: WBC count: 1.87 cubic mm, lymphocytes: 0.44 cubic mm, platelets: 488 cubic mm, creatinine: 1.4 mg/dL, CRP: 6 mg/L, ferritin: 233 ng/mL, D-dimer: 689 ng/mL and fibrinogen: 181 mg/dL. The nasopharyngeal swab test confirmed the diagnosis of severe acute respiratory syndrome coronavirus 2 (COVID-19). The chest CT scan revealed signs of viral pneumonia, including ground-glass opacities, subpleural lines and septal thickness. Subsequently, treatment with mycophenolate mofetil was stopped, and he started receiving off-label treatment with favipiravir, hydroxychloroquine, azithromycin and methylprednisolone. Treatment tacrolimus was continued at a lower dose with a blood trough level of 4–6 ng/mL. In view of low fibrinogen levels, he started receiving prophylactic therapy with enoxaparin sodium [enoxaparin]. During the first 6 days of monitoring, no deterioration of clinical condition was observed. On day 21, his PCR test results showed negative results. He made full recovery, and subsequently, he was discharged from the hospital. Currently, his condition was good with a serum creatinine level of 1.3 mg/dL.

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