Pediatric Nephrology (2021) 36:209
https://doi.org/10.1007/s00467-020-04782-2

LETTER TO THE EDITORS

SARS-CoV-2 infection associated with the recurrence of nephrotic syndrome in a Japanese boy

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Received: 10 September 2020 / Accepted: 14 September 2020 / Published online: 29 September 2020
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Dear Editors,

Since the world was hit by the pandemic of coronavirus disease 2019 (COVID-19), it has spread rapidly worldwide. The clinical impact of the SARS-CoV-2 infection in children is limited compared with adults. Therefore, clinical data on COVID-19 in children during the management of nephrotic syndrome (NS) is also lacking. To date, only one case who developed COVID-19 with simultaneous onset of NS has been reported [1]. A report from Spain described 16 patients with chronic kidney diseases presenting mild respiratory symptoms and a few radiological manifestations. Of these, two patients with steroid-dependent nephrotic syndrome had relapsed, but the prednisone treatment response was good in both cases [2]. Here we encountered a pediatric patient with the recurrence of NS triggered by SARS-CoV-2 infection.

The patient was a 3-year-old Japanese boy diagnosed with NS, for which he received induction therapy with prednisolone (2 mg/kg/day) and achieved complete remission. During the process of prednisolone tapering, the patient was tested using the polymerase chain reaction test for SARS-CoV-2 because he had been in close contact with the infection and subsequently tested positive. He was transferred and admitted to our hospital for the concurrent management of COVID-19 and NS. On admission, no abnormalities were observed following a general physical examination except for a high fever and eyelid edema. Additionally, a urinary qualitative analysis revealed that the urinary protein level was positive. Urinary protein level was 6.3 g/gCr. Hematologic examination revealed white blood cells 10,700/μL (neutrophils 90.0%, lymphocytes 7.1%), hemoglobin 13.4 g/dL, and platelets 252,000/μL. Serum creatinine (0.18 mg/dL) and blood urea nitrogen (4.0 mg/dL) were normal. C-reactive protein was slightly elevated at 0.37 mg/dL. Serum total protein and albumin were slightly decreased, 6.3 mg/dL and 3.5 mg/dL, respectively. The lactate dehydrogenase level was slightly elevated, 348 U/dL. Chest computed tomography imaging showed no consolidations and ground glass opacity. His fever lowered for only 1 day without treatment for COVID-19. Since the urinary protein level increased, we treated him with prednisolone dosed up to 2 mg/kg/day regarded as recurrence. Urinary findings gradually improved, with remission occurring a week after treatment was initiated.

To our knowledge, this is the first reported case with the recurrence of NS triggered by the SARS-CoV-2 infection in Asia. No treatment for SARS-CoV-2 infection has been established yet. A few reports, including our case, support that daily administration of maintenance doses of prednisolone may be effective for managing the relapse of NS associated with SARS-CoV-2 infection.

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