Acute Kidney Injury in COVID-19 Pandemic

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Dear Editor,

We read with great interest the recent article by Perico et al. [1] on COVID-19 and kidney involvement.

The authors reported that acute kidney injury (AKI) is one of most common comorbidities of COVID-19 [2]. However, previous reports showed that viruses of the Coronaviridae family differently affected the kidney: AKI was present in only 6% of patients with SARS coronavirus (SARS-CoV) infection [1], in 75% of patients with Middle East respiratory syndrome coronavirus (MERS-CoV) infection [3], and in 25% of patients with SARS-CoV2 infection [4]. In all cases, AKI was identified as a fatal complication.

The different rates of renal involvement were independent of coronavirus renal tropism, since SARS-CoV and Sars-CoV2, and MERS-CoV receptors (ACE2 and DPP-4, respectively) are equally expressed in renal epithelium [5]. In particular, MERS-CoV showed a direct cytopathic effect on renal epithelial cells [4]. In contrast, SARS-CoV was associated with acute tubular necrosis without signs of glomerulopathy [1], and without in vitro cytopathic effect on renal epithelial cells; renal impairment was likely due to specific pathogenic conditions, including cytokine

release syndrome, rather than active viral replication in the kidney, and was related to multi-organ failure [3].

Interestingly, subjects infected with SARS-CoV2 seem to be affected by AKI more frequently than subjects infected with SARS-CoV (25%) [2], despite the same human receptors (ACE2). Perhaps an increased affinity of SARS-CoV2 for ACE2 could explain its higher renal tropism [5]. A recent study showed that SARS-CoV2 antigens accumulated in kidney tubules, suggesting that it is able to directly affect kidney cells. These data are consistent with the high prevalence (40%) of kidney injury, such as proteinuria and haematuria, at hospital admission of COVID-19 patients [2].

Therefore, given the role of AKI as a fatal comorbidity for COVID-19, and the frequent presence of renal signs in the early phase of the infection, we recommend early monitoring of renal involvement in these patients.

Disclosure Statement

The authors have no conflicts of interest to declare.

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