Clinical Features Deserve Consideration for a Urologist in COVID-19

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Coronavirus family of seven viruses[(1)] is common viruses that usually cause a simple cold[(2)]. Still, the novel coronavirus (SARS-CoV-2) pandemic has caused 1,930,780 cases, and 120,450 deaths, by April 14, 2020. To better manage COVID-19, Siddiqi et al.[(3)] have suggested a staging system for the COVID-19 illness. **Table 1**. Stage I is a mild early infection that needs anti-viral medication. Stage IIa is a pulmonary involvement without hypoxia[(3)]. The use of anti-inflammatory treatments (such as corticosteroids) too early could aggravate viral replication[(3)]. In stage IIb, hypoxia develops, and early administration of anti-inflammatory medications such as corticosteroids is most beneficial[(3)]. In stage III, there is an extra-pulmonary hyper-inflammatory syndrome[(3)], which is accompanied by a cytokine releasing storm and a 49.0% mortality rate[(1)]. Immunomodulatory therapy is indicated before it results in multi-organ dysfunction[(3)]—table 1. Pharmacotherapy in COVID-19 is most beneficial when started early in the course of the disease. Still, its effectiveness in advanced stages may be uncertain[(3)].

A study on 72314 COVID-19 patients[(4)] showed that 81% had mild symptoms with an overall mortality of 2.3%. Cheng et al.[(5)] reviewed the kidney disease associated with in-hospital death in patients with COVID-19. On admission, 83.1%, 81.8%, 10.7%, 14.4%, and 13.1%, had high levels of high- sensitive C-reactive protein, erythrocyte sedimentation rate (ESR), procalcitonin, creatinine, and blood urea nitrogen (BUN), respectively. Also, 43.9%, 26.7%, and2% of patients had proteinuria, hematuria, and chronic kidney disease, respectively. Those who had increased serum creatinine at admission had a higher mortality rate (30.9% vs. 9.2%). After adjusting for age, sex, disease severity, comorbidities, and lymphocyte count, the following were all associated with in-hospital death: proteinuria of any degree, hematuria of any degree, elevated baseline BUN, serum creatinine, peak serum creatinine > 1.5mg/dl, and acute kidney injury (AKI) over stage 2.

Zhou et[(6)] showed increased odds of in-hospital death associated with older age (odds ratio 1·10, 95% CI 1·03–1·17; $p = 0{\cdot}0043$), and d-dimer levels greater than 1·0 µg/mL (18·42, 2·64–128·55; $p = 0{\cdot}0033$), increased creatine kinase ($P = .001$) (odds ratio 2.56, 95% CI 1.03–6.36; $p = .001$), and creatinine more than 1,5 mg/dl (odds ratio 4.39, 95% CI 1.01–19.06; $p = .048$)[(6)].

Dialysis patients might be a highly susceptive population. Hemodialysis centers are a high-risk zone in the outbreak of a COVID-19 epidemic [8], which is a crucial concern regarding the safety of health care professionals and patients[(7)].

In heart transplant patients, clinical presentations were not distinct from those described in non-transplanted patients[(8)].

Guillen et al.[(9)] reported one COVID-19 kidney transplant patient with atypical presentation of fever and vomiting. After five days, creatinine raised from 1.6 to 3.1 mg/dl. The patient was treated with ventilatory support. The laboratory findings were similar to non-transplant patients. Tacrolimus and everolimus were withdrawn immediately[(9)]. In non-transplanted patients, 10% are presenting gastrointestinal symptoms[(10)].

SARS COVID-19 virus has been detected in blood and stool, as had the coronaviruses responsible for SARS and MERS[(11)]. WHO states that the duration and frequency of shedding of COVID-19 virus in stool and potentially in urine are unknown[(11)].

Zhu et al.[(12)] reported one kidney transplanted patient infected with SARS-CoV-2. Symptoms, signs, clinical features, and laboratory findings were almost similar to non-transplanted patients. Immediately on admission, all immunosuppressive drugs stopped[(12)]. The renal graft function deteriorates mildly during hospitalization (from 1.1 to 1.4 mg/dl), which returned to baseline soon. The patient was then given the following treatment: Methylprednisolone (MP 40mg daily, intravenously); Intravenous immunoglobulin (IVIG, 5g on the first day and 10g/d for the next 11 days); Biapenem; (Interferon α (5 million units daily, atomization inhalation). When symptoms relieved, although the CT scan showed progression of lung infiltration, oral tacrolimus was resumed at half its original dosage following five days of complete discontinuation. On day 18 of illness, authors began administering oral tacrolimus and MMF to their full pre-illness dosage.[(12)].

We recommend a further review of the literature for the best interest of the patients.

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Table 1- stages of COVID-19, according to Siddiqi et al(3).

Stage - features	Clinical finding	Lab finding	Appropriate treatment
Stage I (Mild). **inoculation and early establishment of disease**	Mild malaise, fever, and a dry cough.	A positive finding in respiratory sample PCR, serum testing for SARS-CoV-2 IgG and IgM, chest imaging, complete blood count (CBC), and liver function tests. lymphopenia and neutrophilia	Symptomatic relief; use of Anti-viral therapy such as remdesivir, chloroquine, hydroxychloroquine, and others
Stage IIa (Moderate). Established pulmonary disease, viral multiplication and localized inflammation which may need hospitalization	viral pneumonia, with cough, fever but without hypoxia.	Imaging with chest roentgenogram or computerized tomography reveals bilateral infiltrates or ground-glass opacities. Blood tests show increasing lymphopenia, along with transaminitis.	Anti-viral therapy. The use of corticosteroids may be avoided
Stage IIb (Moderate-to-sever). Established pulmonary disease, viral multiplication, and localized inflammation, which need hospitalization	viral pneumonia, with cough, fever with hypoxia (defined as a PaO2/FiO2of <300 mmHg). likely will progress to requiring mechanical ventilation	Finding like stage IIb. Markers of systemic inflammation may be elevated, but not remarkably so.	Anti-viral therapy Mechanical ventilation Corticosteroids may be useful
Stage III (Sever). Extra-pulmonary systemic hyper inflammation syndrome.	Shock, vasoplegia, respiratory failure, and even cardiopulmonary collapse. Systemic organ involvement, even myocarditis.	Markers of systemic inflammation appear to be elevated. A decrease in helper, suppressor, and regulatory T cell is seen. Interleukin (IL)-2, IL-6, IL-7, granulocyte-colony stimulating factor, macrophage inflammatory protein 1-α, tumor necrosis factor-α, C-reactive protein, ferritin, and D-dimer are significantly elevated.	Anti-viral therapy; Corticosteroids; Immunomodulatory agents to reduce systemic inflammation before it overwhelmingly results in multi-organ dysfunction; convalescence plasma transfusion; cytokine inhibitors such as tocilizumab (IL-6 inhibitor) or anakinra (IL-1 receptor antagonist)

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