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Non-recommended medical interventions and their possible harm in patients with COVID-19

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Dear Editor,

The disease caused by the SARS-CoV-2 virus (COVID-19) can manifest itself through more than 80 symptoms and signs, considering it a multisystemic disease.[1] However, the disease is classified according to the pulmonary involvement evaluated through the measurement of the respiratory rate, respiratory signs and symptoms, oxygen saturation ($SatO_2$), the ratio of arterial oxygen pressure to inspired oxygen fraction (PaO_2/FiO_2), and the extent of lung lesions seen on non-contrast chest tomography. The leading cause of death among patients with severe and critical COVID-19 is diffuse alveolar damage, a histopathological manifestation of Acute Respiratory Distress Syndrome (ARDS).[2]

The early use of oxygen therapy in cases of hypoxemia and acute respiratory failure is the only intervention that has been shown to halt the progression of the disease and have a favourable impact on the reduction of mortality in severely ill patients.[2] The same benefit we can see in mild and moderate cases of outpatient management with daily monitoring of $SatO_2$ and symptoms associated with the disease. In these cases, the routine use of antibiotics, anticoagulation, oxygen, vitamins, or the performance of auxiliary laboratory or imaging tests is not recommended.[3]

Unfortunately, we see especially in developing countries the use of non-recommended pharmacological interventions in non-severe cases, which has been associated with an increase in unnecessary risks to the health of the patient. Additionally, the irrational use of auxiliary examinations, including computed tomography (CT) scans and X-rays, only increases the anxiety of the patient and that of the doctor, who is often "forced" to prescribe a treatment aimed at the supplementary examinations rather than at the patient's clinical condition.[4]

The case fatality rate of patients with non-severe COVID-19 is estimated to be less than 0.6%.[5] Adding inappropriate pharmacological interventions can increase morbidity and mortality, such as the following interventions.

Antibiotic use in outpatients has been associated with a 13% increased risk of dying [hazard risk (HR) = 1.13, 95% confidence interval (CI) 1.08–1.19]. Although considered hypothetical, the use of antibiotics may potentially generate alterations of the microbiota and the enteric immune response, possibly favouring the entry of SARS-CoV-2 through the enterocytes, and allows more significant viral replication.[6] In addition, an increase in infections by resistant bacteria has been reported.[7] However, COVID-19 is a viral infection, and therefore the use of antibiotics is incorrect, highlighting that bacterial coinfection is infrequent among severe cases and practically zero in mild and moderate cases.[8]

The use of systemic corticosteroids has been associated with an increased risk of dying from COVID-19 from 19% (rate ratio 0.91–1.55) to 28% (1.00–1.62) in patients who are not oxygen users during COVID-19 illness.[9] In addition, the corticosteroid, when correctly indicated at a dose of 40 mg of prednisone per day (equivalent to 6 mg of dexamethasone per day) for 5 days, is associated with an increase in the incidence of sepsis (4.98;

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95%CI 1.69–14.72), venous thromboembolism (4.15; 95%CI 2.45–7.03), and fracture (1.77; 95%CI 1.31–2.39) in the following 5–30 days after the use of the corticosteroid.[10] The use of dexamethasone 6 mg/day and other corticosteroids [World Health Organization (WHO) meta-analysis, REMAP-CAP trial] have also been shown to reduce mortality; and remdesivir, although with some controversy, has also been shown to reduce mortality among patients not needing mechanical ventilation. Now also, the inappropriate use of steroids in COVID-19 may be associated with the development of mucormycosis (CAM).[11]

The use of proton pump inhibitors (PPIs), particularly the use of omeprazole, can alter the primary line of defence against infection by substantially raising gastric pH. Thus, SARS-CoV-2 can enter the body through enterocytes expressing angiotensin-converting enzyme receptor 2. Furthermore, the odds ratio (OR) for severe COVID-19 increases with PPIs, being 2.15 when a single daily dose is used or up to 3.67 when a double daily dose is used in patients who were not habitual PPI users.[12]

The use of oral or parenteral anticoagulation or antiplatelet therapy to treat patients with mild and moderate COVID-19 is also associated with an increased risk of bleeding without clinical benefit since the incidence of venous thromboembolic disease, or high blood pressure is extremely low in mild and moderate outpatients.[13]

In addition, other general recommendations that health professionals usually give to patients with COVID-19, such as absolute rest or remaining in the prone position, can also increase the risk of venous thromboembolism that had already increased previously with the incorrect use of systemic corticosteroids or just generates inconvenience for patients without benefits because they are not oxygen users.[14]

The use of hydroxychloroquine with or without azithromycin in patients with COVID-19 increases the risk of mortality by 11% (2–20%; OR = 1.11; 95% CI 1.02–1.20) due to cardiovascular events. Together with the use of ivermectin, this also creates in the patients a false sense of security without clinical benefit.[15]

Vitamin or trace element supplements as part of the treatment of COVID-19 are not recommended to date, especially when patients with this disease tend to be eutrophic.[16]

If we add the request for auxiliary examinations and chest tomographies to all these inappropriate and risky measures, we are facing an increase in economic expenses without benefits.[4] Mild and moderate cases that do not require oxygen have a benign and self-limited evolution of COVID-19 disease and only require monitoring or control by video call every 24–72 h depending on the particular characteristics of the patients without face-to-face visits by health professionals and ensuring adequate daily control of $SatO_2$ by pulse oximetry to detect hypoxemia or acute respiratory failure requiring prompt initiation of the only treatment that reduces mortality: oxygen.[3]

An important risk factor for a poor clinical evolution of some patients with mild and moderate COVID-19 may be the wrong indications of health professionals who do not use scientific information and clinical practice guidelines adequately. Thus, more than a year and a half after the onset of the disease, it is time to be prudent with the treatment of outpatients and inpatients and apply the maximum concept of modern medicine: "*primum non-nocere*."

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References

1. Pecho-Silva S, Arteaga-Livias K, Bazán-Concha BE, *et al.* Complicaciones extrapulmonares de la enfermedad por COVID-19. *Rev Peru Investig Salud* 2020; 4: 183–189.
2. Cevik M, Kuppalli K, Kindrachuk J, *et al.* Virology, transmission, and pathogenesis of SARS-CoV-2. *BMJ* 2020; 371: m3862.

3. Alcázar-Aguilar OO, Castro-Yanahida JE, Rodríguez-Vargas MC, *et al*. Recomendaciones dirigidas a los familiares responsables del cuidado domiciliario de un paciente diagnosticado con Covid-19. *Rev Peru Investig Salud* 2021; 5: 40–49.

4. Carroll N, Sadowski A, Laila A, *et al*. The impact of COVID-19 on health behavior, stress, financial and food security among middle to high income Canadian families with young children. *Nutrients* 2020; 12: 2352.

5. Levin AT, Hanage WP, Owusu-Boaitey N, *et al*. Assessing the age specificity of infection fatality rates for COVID-19: systematic review, meta-analysis, and public policy implications. *Eur J Epidemiol* 2020; 35: 1123–1138.

6. Mancilla-Galindo J, García-Méndez JÓ, Márquez-Sánchez J, *et al*. All-cause mortality among patients treated with repurposed antivirals and antibiotics for COVID-19 in Mexico city: a real-world observational study. *EXCLI J* 2021; 20: 199–222.

7. Arteaga-Livias K, Pinzas-Acosta K, Perez-Abad L, *et al*. A multidrug-resistant Klebsiella pneumoniae outbreak in a Peruvian hospital: another threat from the COVID-19 pandemic. *Infect Control Hosp Epidemiol*. Epub ahead of print 5 January 2021. DOI: 10.1017/ice.2020.1401.

8. Langford BJ, So M, Raybardhan S, *et al*. Bacterial coinfection and secondary infection in patients with COVID-19: a living rapid review and meta-analysis. *Clin Microbiol Infect* 2020; 26: 1622–1629.

9. The RECOVERY Collaborative Group, Horby P, Lim WS, *et al*. Dexamethasone in hospitalized patients with Covid-19. *N Engl J Med* 2021; 384: 693–704.

10. Waljee AK, Rogers MAM, Lin P, *et al*. Short term use of oral corticosteroids and related harms among adults in the United States: population based cohort study. *BMJ* 2017; 357: j1415.

11. Rodriguez-Morales AJ, Sah R, Millan-Oñate J, et al. COVID-19 associated mucormycosis: the urgent need to reconsider the indiscriminate use of immunosuppressive drugs. *Ther Adv Infect Dis* 2021; 8: 20499361211027065.

12. Almario CV, Chey WD and Spiegel BMR. Increased risk of COVID-19 among users of proton pump inhibitors. *Am J Gastroenterol* 2020; 115: 1707–1715.

13. Boonyawat K, Chantrathammachart P, Numthavaj P, *et al*. Incidence of thromboembolism in patients with COVID-19: a systematic review and meta-analysis. *Thromb J* 2020; 18: 34.

14. Weatherald J, Solverson K, Zuege DJ, *et al*. Awake prone positioning for COVID-19 hypoxemic respiratory failure: a rapid review. *J Crit Care* 2021; 61: 63–70.

15. Axfors C, Schmitt AM, Janiaud P, *et al*. Mortality outcomes with hydroxychloroquine and chloroquine in COVID-19 from an international collaborative meta-analysis of randomized trials. *Nat Commun* 2021; 12: 2349.

16. Barazzoni R, Bischoff SC, Breda J, *et al*. ESPEN expert statements and practical guidance for nutritional management of individuals with SARS-CoV-2 infection. *Clin Nutr* 2020; 39: 1631–1638.

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