



Evaluation of the Effect of Combination Therapy on Treatment of COVID-19: A Cohort Study

AmirHosein Ghazale¹, Ali Ghazvini^{2,*}, Mostafa Ghanei^{2,*}, Ensieh Vahedi², Shideh Omidian³, Abolfazl Mozafari⁴, Mohammad Rezapour¹, Nafiseh Rastgoo⁵, Fatemeh Movaseghi⁶, Fateme Mansouri¹, MohammadAli Zohal³, Maryam Gheraati³, Seyed Hassan Saadat⁷, Hassan Goodarzi¹⁰, Mohammad Gholami Fesharaki⁸, AmirMohammad Dehghan Banadkooki¹, Shahrzad Saloo¹ and Hesamodin Salou⁹

¹ Student Research Committee, Baqiyatallah University of Medical Sciences, Tehran, Iran

² Chemical Injuries Research Center, Systems Biology and Poisoning Institute, Baqiyatallah University of Medical Sciences, Tehran

³ Metabolic Diseases Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran

⁴ Department of Medical Science, Qom Branch, Islamic Azad University, Qom, Iran

⁵ Student Research Committee, Qazvin University of Medical Sciences, Qazvin, Iran

⁶ Department of Medical Science, Qom Branch, Islamic Azad University, Qom, Iran

⁷ Behavioral Sciences Research Center, Lifestyle Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran

⁸ Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

⁹ School of Veterinary Medicine, Semnan University, Semnan, Iran

¹⁰ Trauma Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran

* **Corresponding author** Ali Ghazvini, Chemical Injuries Research Center, Systems Biology and Poisoning Institute, Baqiyatallah University of Medical Sciences, Tehran. Tel: 09121755664; Email: Qazvinia@gmail.com
Mostafa Ghanei, Chemical Injuries Research Center, Systems Biology and Poisoning Institute, Baqiyatallah University of Medical Sciences, Tehran. Tel: 09123209673; Email: mghaneister@gmail.com

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Abstract

Background: COVID-19 is a new disease for which a definitive treatment has not yet been proposed.

Objectives: The present study aimed to investigate the effect of combination therapy on the treatment of COVID-19 due to the importance of finding an appropriate treatment for this epidemic disease.

Methods: This two-center cohort study included 175 confirmed COVID-19 inpatients at two medical centers designated for the treatment of COVID-19 patients in Qom and Qazvin, Iran. In this study, four different groups of drug regimens were studied which included G1 (azithromycin, prednisolone, and naproxen), G2 (lopinavir/ritonavir, azithromycin, naproxen, and prednisolone), G3 (hydroxychloroquine, azithromycin, naproxen, and prednisolone), and G4 (levofloxacin, vancomycin, hydroxychloroquine, and oseltamivir). It should be noted that G1, G2, G3, and G4 treatment regimens were used on 48, 39, 30, and 77 patients, respectively.

Results: The study participants included 175 confirmed COVID-19 patients with mean±SD age of 58.9 ±15.1 years, out of whom 80 (46%) patients were male and the rest were females. The results indicated that the hospital stay period was significantly shorter in the G1 compared to other groups (G1:5.9±2.4, G2:8.1±4.2, G3: 6.3±1.7, and G4: 6.4±2.9; [P-value=0.008]). It should be noted that pulse rate, oxygen saturation, hemoglobin, and platelet count (PLT) changed significantly during the study in four treatment groups; however, a significant change in temperature, creatinine, and white blood cell (WBC) was observed only in G3, G4, and G1 groups, respectively. The number of ICU admissions and deaths were not statistically significant among the patients who received the four treatment regimens (P=0.785). Based on the results, the history of ischemic heart disease, baseline oxygen saturation, WBC, neutrophil, lymphocyte count, and C-reactive protein (CRP) are the risk factors for the prolonged hospital stay in COVID-19 patients.

Conclusion: The obtained results in this study indicated that the combination of azithromycin, prednisolone, and naproxen is the most effective regimen for the treatment of COVID-19, compared to three other combination treatment regimens.

Keywords: Anti-inflammatory drugs, Antiviral drugs, Combination therapy, Corticosteroid, COVID-19, Immunomodulators drugs

1. Background

Coronavirus disease 2019 (COVID-19) is a new virus disease that started in Wuhan, China, and was quickly transformed into a pandemic. This pandemic has posed an unprecedented impact on the healthcare system due to the high spread of the disease and its mortality rate (1).

Nowadays, the lack of a specific, effective, and proven standard treatment for COVID-19 disease is one of the serious public health challenges worldwide. Many aspects of COVID-19 disease including demographic characteristics of patients, clinical features, and biological abnormalities, as well as the radiological and pathological patterns of the

disease have been described so far. Moreover, many studies have addressed different therapeutic strategies for the management of the disease.

The proposed medicines for the treatment of COVID-19 included Kaletra (lopinavir-ritonavir), remdesivir, oseltamivir, ribavirin, sofosbuvir (2-5), immunomodulators, such as chlorine and hydroxychloride (6-7) as well as anti-inflammatory medications, such as corticosteroids (8-10) or their combination (11).

The main COVID-19 management strategy has its focus on antiviral treatments with Kaletra (lopinavir-ritonavir), remdesivir, oseltamivir, ribavirin, sofosbuvir (2-5), immunomodulators, such as chlorine and hydroxychloride (6,7) and anti-inflammatory