

Purpose:

The purpose of this research was to compare the efficacy of low-dose versus high-dose dexamethasone in the treatment of SARS-CoV-2 infection.

Methods:

In this single-center, retrospective cohort study, we compared patients infected with SARS-CoV-2 (i.e. COVID-19) who had received either dexamethasone 6 mg intravenously (IV) or by mouth (PO) daily or dexamethasone 10 to 20 mg IV or PO daily between the dates of January 1, 2020 and March 31, 2021. The primary outcome was the number of ventilator-free days. Secondary outcomes included incidence of hyperglycemia, hospital length of stay, and oxygen requirements. Inclusion criteria were as follows: age \geq 18, SARS-CoV-2 positive PCR test, and administration of one of the aforementioned treatment regimens for at least 7 days. A 48-hour washout period following admission determined group assignment; this corrected for variation in initial emergency department dosing and final inpatient dosing regimens. Patients were excluded if they were managed on home oxygen of any form or if the dose of dexamethasone was escalated or de-escalated following the washout period. A sub-group analysis was completed utilizing the quick COVID-19 severity index (qCSI), in which the primary and secondary outcomes were analyzed after stratifying patients by baseline severity of illness. One-hundred and twenty-six patients were required to reach 80% power to detect a mean difference of one day free of mechanical ventilation between groups. Baseline characteristics were evaluated using descriptive statistics. The Student t-test was used to evaluate continuous data and the Chi-square test was used to evaluate discrete data.

Results:

63 patients were included and analyzed in each group. The average duration of therapy was 9.4 days (standard deviation 0.9). It was observed that, on average, patients in the low-dose group experienced more ventilator free days (9.7 days vs 6.3 days; $p < 0.00001$), less hyperglycemia (149.5 mg/dL vs 183.2 mg/dL; $p < 0.00001$), a shorter hospital length of stay (13.5 days vs 26.9 days; $p < 0.00001$), and less invasive oxygen requirements ($p < 0.00001$) when compared to the high-dose group. According to the qCSI, a slightly smaller proportion of patients in the low-dose group had a low baseline severity of illness (30 patients vs 33 patients), whereas the proportion was more uneven in the high-dose group (12 patients vs 51 patients). Outcomes observed in the sub-group analysis were similar to those observed in the primary and secondary analyses.

Conclusion:

Among adults infected with SARS-CoV-2 treated with high-dose or low-dose dexamethasone, it was observed that patients in the high-dose group experienced fewer ventilator-free days, lengthier hospital length-of-stay, higher blood glucose readings, and more invasive oxygen requirements. The sub-group analysis suggests that patients with a more severe baseline illness tended to receive higher doses of dexamethasone but experienced worse outcomes.