

## BACKGROUND

Over the past few years, it has been shown that T cells play an essential role in antiviral immunity, in the course of the COVID-19 pandemic some studies reported an association between lymphocytopenia and exhaustion of the surviving remaining T cells which are apparently functional in patients with acute COVID-19, specially in those with severe forms of presentation. Mexico has been widely affected by SARS-CoV-2. We present a case series of COVID-19 CD4 + T cells association with the severity of the disease at a teaching hospital in Mexico City.

## OBJECTIVE

Describe the difference in the CD4 + T cell count in relation to the severity of the presentation of COVID-19 and the need for the requirement of invasive mechanical ventilation

## METHODS

We included 19 patients admitted to our hospital (ABC Medical Center) from May 7 to 15, 2020 with a confirmed diagnosis of COVID-19 and were randomized into 2 groups according to the severity of the presentation (severe or critical) A determination of CD4 + T cells was made at admission, we also reported the need for invasive mechanical ventilation at some point of the hospitalization for each group, all patients were followed until their hospital discharge. One patient was excluded because he was still admitted at the time of the analysis.

## RESULTS

Of the 18 patients included, 9 (50%) fulfilled criteria of severe and 9 (50%) of critical. The mean of CD4 + T cell was 455 (256-697) for the severe and 285.44 (145-430) for the critical (CI 95% P 0.46), the determination of CD8+ T cell was 212 (88-392) for the severe and 201 (59-534) for the critical (CI 95% P 1.19), of the critical patients 8 (88.9%) required invasive mechanical ventilation and only one non-invasive mechanical ventilation, while the severe patients only required support with supplemental oxygen by nasal cannula (9 (100%)). The mean length of hospitalization was 12.73 days (3-34) and all the patients survived until they were discharged home.

## CONCLUSIONS

As it has been reported in some studies, the pathogenesis of SARS-CoV-2 infection in humans is associated with a reduction and functional exhaustion of T cells in patients with COVID-19. In this study we presume that lower levels of CD4+T cells can be associated with critical forms of COVID 19 as the majority of critical patients in our report had < 300 CD4 +T cell count, while we need further studies with a greater number of patients and follow-up to establish reliable determinations, we propose that the levels of CD4+T cell count could be use as a good predictor of severity in COVID-19

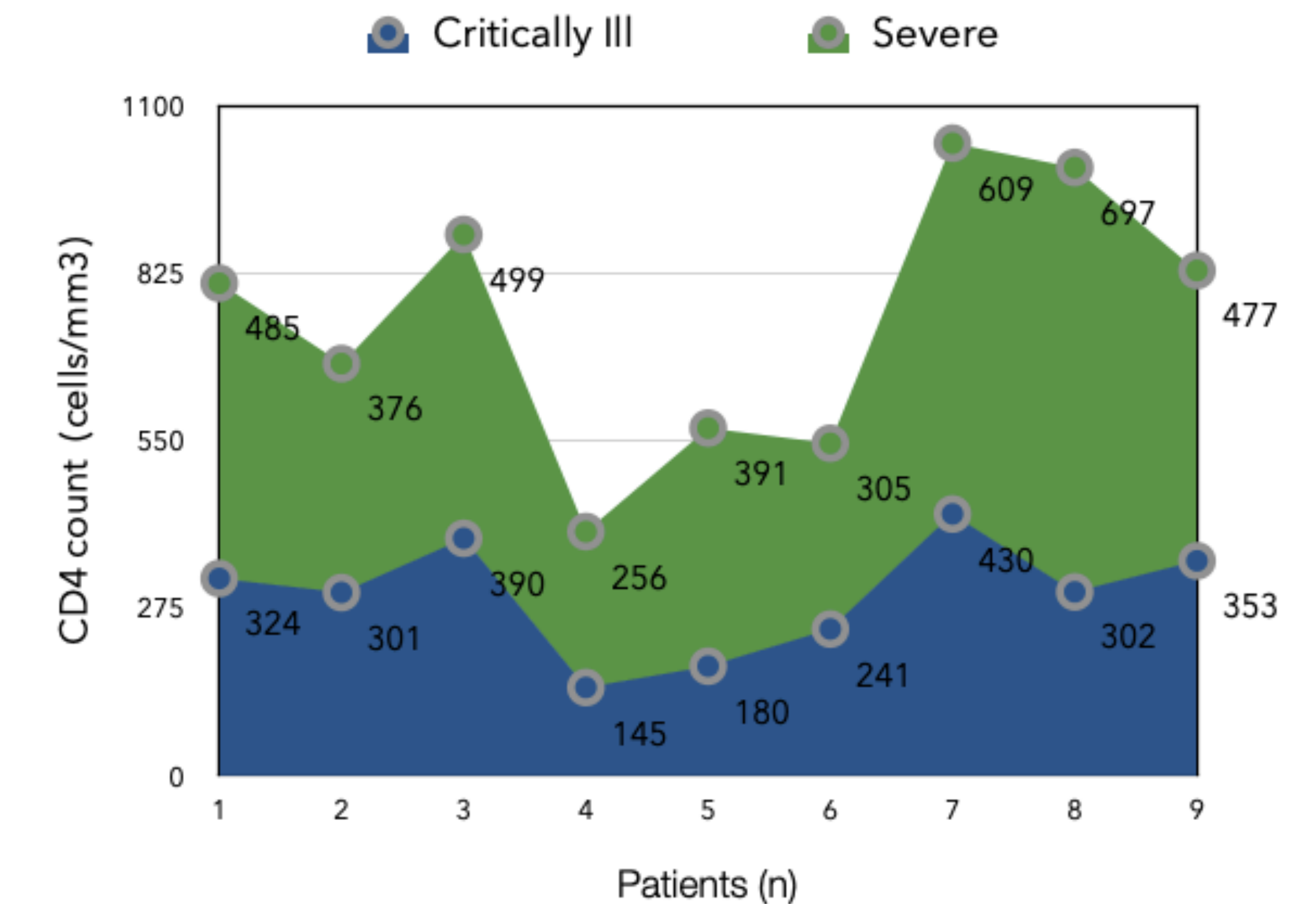


Fig 1. CD4+ T cells difference between severe and critically ill patients with COVID-19.

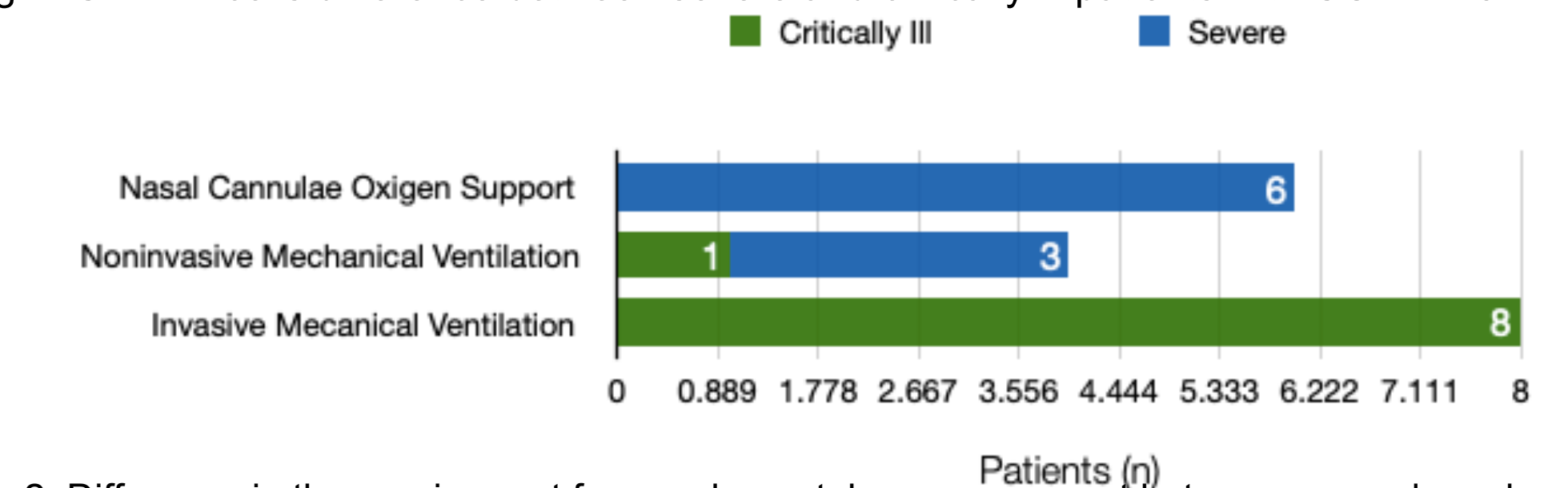


Fig 2. Difference in the requirement for supplemental oxygen support between severely and critically ill patients.

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