



Effects of High Dose Vitamin C Supplementation on Severe COVID-19 Patients In The ICU: A Retrospective Analysis

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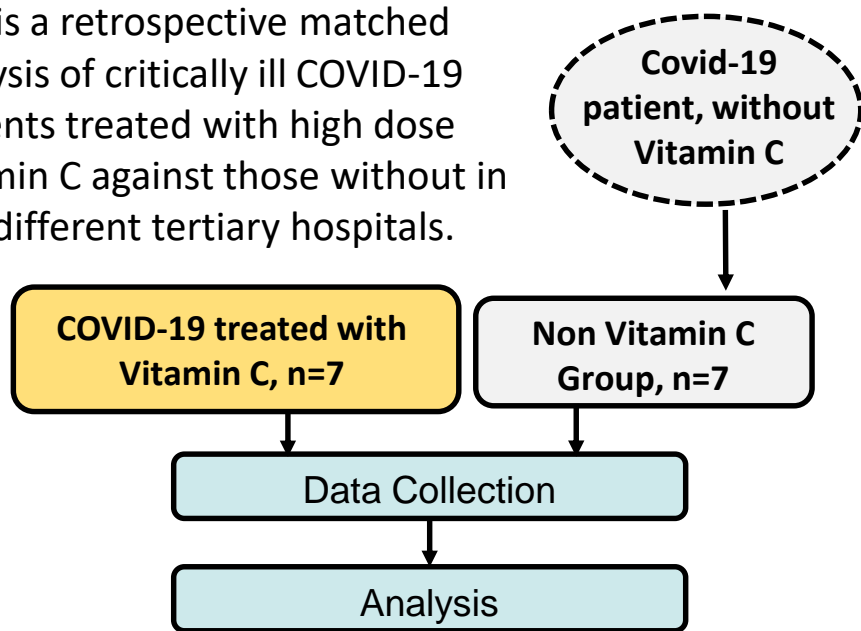
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Introduction

Approximately 14% of confirmed cases developed severe disease which involves acute lung injury (ALI) and acute respiratory distress syndrome (ARDS). The triggering factor is a cytokine storm that causes overwhelming oxidative stress which results in severe lung tissue damage. High dose ascorbic acid (Vitamin C) being an antioxidant that may have the propensity to mitigate such severe oxidative stress in an effort to keep lung injury minimal besides preventing other organ failures.

Methodology

This is a retrospective matched analysis of critically ill COVID-19 patients treated with high dose Vitamin C against those without in two different tertiary hospitals.



Results

Both cohorts showed very similar clinical background, comorbidities, illness severity, and severity score on admission.

The mortality rate differed in which the Vitamin C cohort stands at 14.3% while the Non Vitamin C at 71.4%. Clinical improvement in the Vitamin C group was also reflected by the median change of SOFA score when the disease progressed (0.5 vs 6).

All patients were on oxygen support in which 12 out of the 14 were on ventilator support. Amongst the patients who survived until extubation, days on the ventilator were shorter in the Vitamin C group compared to non Vitamin C (14 vs 19.6 days). When looking at duration to complete weaning of oxygen therapy, it was also shorter in Vitamin C group (16 vs 23.5 days).

Discussion

The results above show that there is some signal in which high dose Vitamin C may be beneficial in patients with severe COVID-19 infection. Pertaining to previous studies done on the COVID-19 cohort, many studies have shown high dose vitamin C usage results in improvement in respiratory function and clinical outcome of Covid-19 patients.

Vitamin C levels in the body may deplete with infection and high doses are needed to replenish the stores as well as provide extra in the face of such stresses.

Protect the tissues from oxidative damage and dysfunction.

Inhibit TNF- α production and in turn, retard the acute hyperinflammatory response.

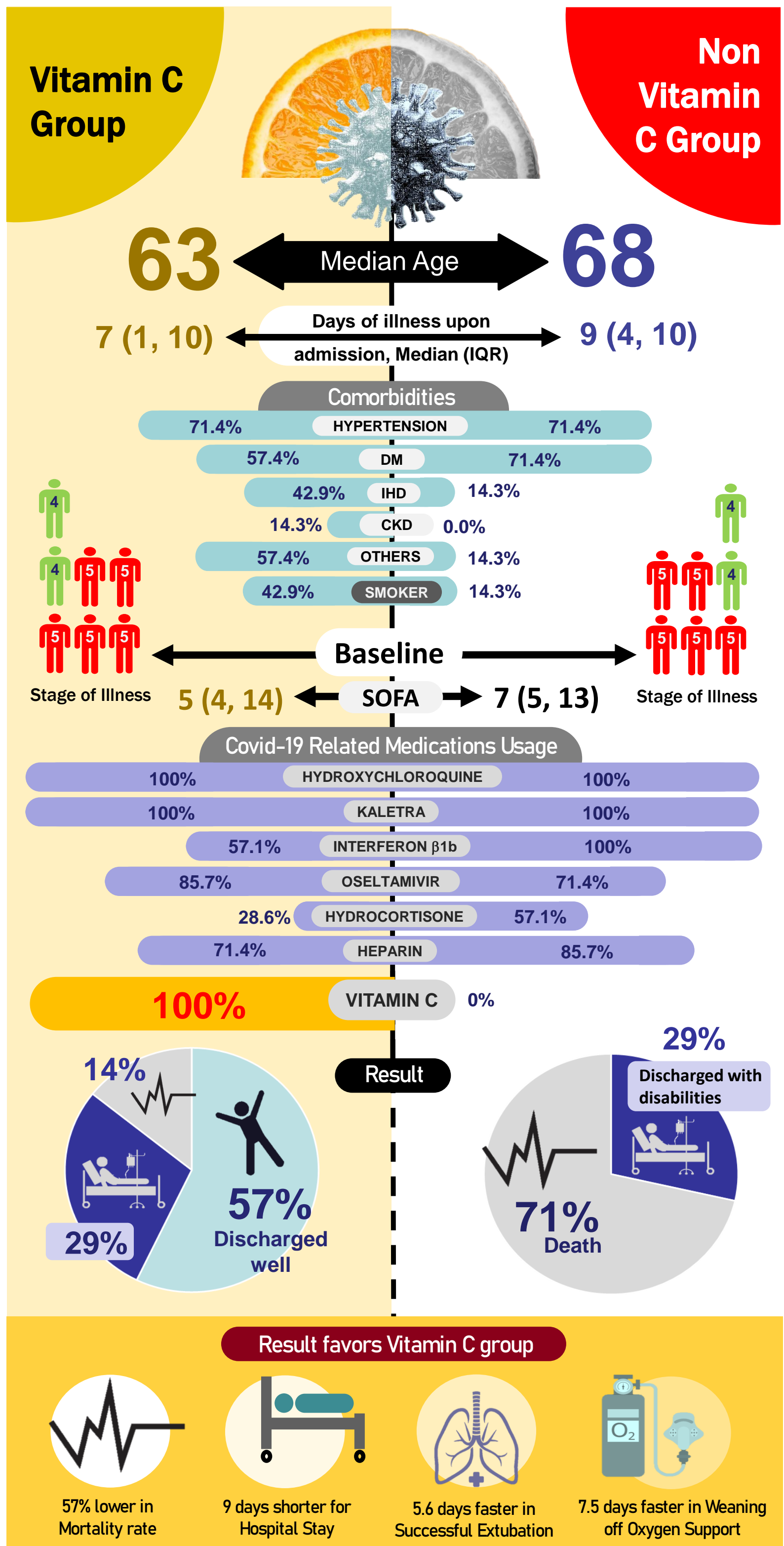
Assists lung epithelial cell recovery and surfactant production to improve lung function and mechanics.

Conclusion

There is a signal towards the utility of high dose Vitamin C as an adjunct in the therapy armamentarium of severe COVID-19 infection in terms of improved mortality and shorter duration of mechanical ventilation.

A future prospective randomized controlled trial will be beneficial to investigate this link besides looking at the other organ failure parameters apart from the lung.

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