

# Review of: "Tocilizumab Plus Corticosteroid in Elderly Patients Hospitalized With COVID-19 Pneumonia: A Retrospective Cohort Study"

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Potential competing interests: No potential competing interests to declare.

This is a retrospective observational study that compared elderly non-intubated COVID-19 patients treated with Tocilizumab + Steroids versus Steroids alone. Primary outcome was: Need of mechanical ventilation within 28 days.

I observed several issues with the paper:

1. There is a discrepancy in the 1ry outcome between the abstract (Where OR of Mechanical ventilation is 2, and  $p = 0.016$ ) and the results section (where it is 1.4 [95% CI: 0.69 – 2.66;  $p = 0.76$ ]). (table 2)
2. In the abstract the author presented the primary outcome as: The incidence of being placed on a ventilator within 28 days was of 20% and 11% (OR=2.0;  $p=0.016$ ) for the treatment and the comparison groups, respectively.

But then concludes a contradictory conclusion: There was no difference in the incidence of mechanical ventilation by day 28 between the patients who were on tocilizumab and those who were not.

1. This dose of Tocilizumab is lower than the recommended dose. I was able to find one RCT recommending this dose. However, even in that study there was a range.

(Zhao H, Zhu Q, Zhang C, Li J, Wei M, Qin Y, Chen G, Wang K, Yu J, Wu Z, Chen X, Wang G. Tocilizumab combined with favipiravir in the treatment of COVID-19: A multicenter trial in a small sample size. Biomed Pharmacother. 2021 ).

1. In the statistical plan, the author described a multi-variable logistic regression model. Yet, in the results section, no further details were provided (such as: Which variables were included in the final model, based on the cutoff value  $p < 0.15$  which the author chose).
2. Similarly, the author described performing: Kaplan-Meier Curves, which could not be found in the results.
3. The author decided to compare the incidence rate using: Harrington-Fleming test, which is a weighted log-rank test. But missed in the statistical plan the predefined weight ( $q$ ) which should be defined a priori (before the data collection), and no justification as to why the author believes that the incidence will not have proportional hazard.
4. I didn't understand the result of the secondary outcome of in-hospital mortality. It was presented as: OR: X; 95% CI: X to X;  $p = X$ ).
5. The imbalance between groups with regards to severity (as shown by more patients on NC in the steroids group) may have confounded the results.

6. Another important confounder may have been the duration of symptoms till ICU admission, Tocilizumab + Steroids could have been given late, confounding the results.

In its current state, I don't recommend publication, and I invite revision by the author.