

Comments to the Author

The work is a retrospective description of white blood cells and specifically lymphocytes involved in adaptive immunity in a series of 373 patients with COVID-19 treated in two Shanghai hospitals. The numbers of each cell subtype are compared between patients classified as either severe or non-severe. The work is interesting because of the newness of this virus, and although previous works have offered similar descriptions before, the current research includes some new parameters (LDH, CRP, C3 and C4) and their correlations with lymphocytes subsets not previously reported. However, including the analysis of B lymphocytes would give very useful information about adaptive immunity.

There are some comments to make on a number of aspects.

1. The research includes 373 patients. Were they consecutively admitted to the ward or was there any criteria to select patients or any reason preventing any case inclusion (except consent not provided). Could there be any potential bias?
2. A brief or general description of the criteria used to classify patients as mild, moderate, severe and critical would be welcomed to allow the reader to figure out how those signs and symptoms relate to the laboratory findings and especially to the characteristics in Table 1.
3. Page 8 line 7: perhaps the authors would want to consider specifying that although the mean values of LDH and CRP declined to normal at discharge there were still patients in the severe group with CRP values above normal (at least that seems to be the situation at the sight of the standard deviation of the variable in severe patients at discharge)
4. Table 5: CD4/CD8 ratio needs revision since 1.92 corresponding to severe patients at admission does not fit with the CD4 and CD8 counts reported in the table (something like 1.17 is more likely), which means that some corrections are also necessary in the results section.
5. Did the authors not measure B lymphocyte subset by flow cytometry? This subset is involved in adaptive immunity and might also provide important clues about severity. According to the representative histogram in Figure 2 there is a very low percentage of CD3+ cells among total lymphocytes in the severe patients group at admission, which implies that perhaps the percentage of B cells is much increased, even if B counts are not high.
6. Figure 1. This figure is not necessary since the same data are presented in tables 3 to 5. In addition, describing in the figure foot the same results as in the text is also not necessary.
7. Figure 2: Mean and Standard deviations of lymphocyte percentages should be presented in a table additionally to the representative histograms, even if only as a supplementary table. Are percentages indicated in each histogram those of the representative blood sample? Or are they the mean value of the group? This should be stated at the figure foot.

Minor corrections.

8. Page 5: immunologic in lines 46 and 58 should be "immunological".
9. Page 6, line 39, commonly should be "common"
10. Page 7, line 22: non-severe should be "severe"

11. Page 8, line 46: "LDH and CRP significantly increased upon admission" should be "LDH and CRP were significantly increased upon admission"
12. Page 8, line 50: "...and subtypes decreased at admission" should be "... and subtypes were decreased..."
13. Page 8 line 55: "NLR decreased" should be "NLR was decreased"
14. Page 9 line 11: T cells functions should be "T cells function"
15. Page 9 line 18: Consider substitution of "number of TLC" instead of "degree of TLC"
16. Page 9 line 30: In "lymphocytes, lymphocyte subsets and TLC..." Are lymphocytes and TLC in this sentence different variables? Should one of both be deleted?
17. Page 9, line 45-46: "Upon discharge... but not significant", does not seem to be true, since the only trends is for NLR and the rest of correlations are not even trends.
18. Table 3: LDH and CRP are in the title but are missing in the table.
19. Table 3: The units of Neutrophil count and TLC are wrong since superscript of 10 should be 9 and not 6. The same is true for Table 4 "neutrophil count"
20. Figure 2; figure foot could be shortened; there is no need to repeat "representative plot....CD8+CD3+CD45+" if "(A,B,C,D)" is located after "...from severe COVID-19 patientes at admission" and so on...
21. Figure 3 title has a mistake. In addition, the plots have very bad visual quality, and the R or P values included in the graph are not visible. I would eliminate this figure since the same is already presented in tables 6 and 7.