

LETTER TO EDITOR

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Comments on “Evaluation of Interleukin-21, 23 and 27 mRNA Expression and Protein Level in Liver Transplant Patients”

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DEAR EDITOR

I read with great interest a recent article by Afshari et al entitled “Evaluation of Interleukin-21, 23 and 27 mRNA Expression and Protein Level in Liver Transplant Patients”.<sup>1</sup> In this study, Afshari and her colleagues have been studied the expression of three cytokines including IL-21, IL-23 and IL-27 at mRNA transcription and protein levels in order to investigation the role of these cytokines in liver transplantation rejects. They evaluated the expression of these cytokines after 1<sup>st</sup>, 4<sup>th</sup> and 7<sup>th</sup> day of post-transplantation in 51 patients with acute rejection and 54 patients with non-acute rejection. Because they assessed the gene expression of interleukin-21, 23 and 27 in the same subjects in three time intervals post-transplantation in each group, so their measurements are completely dependent. As stated in the statistical analysis section and shown in the figure 1 of the article, the authors used k independent (Kruskal-Wallis H test) and Mann-Whitney tests to compare the mean level of cytokine gene expression between three time-points of measurement. Kruskal-Wallis H test is used to determine statistically significant differences between two or more independent groups on a continuous variable with non-parametric distribution.<sup>2</sup> So, after investigation the normality of numerical data, the

authors must use repeated measures analysis of variance (ANOVA) or Friedman test to compare the means of interleukin-21, 23 and 27 gene expression between three time-points of measurement (i.e., 1, 4 and 7 days after liver transplantation).

As another comment, the authors did not compare and show the mean protein level of interleukin-21, 23 and 27 between three time intervals after liver transplantation in each group like is shown in figure 1 of the article about interleukin-21, 23 and 27 gene expressions.

Taken to gather, analysis of differences of interleukin-21, 23 and 27 gene and protein expressions between three time points after liver transplantation with repeated measures ANOVA or Friedman test is strongly suggest to improve the results of this valuable study.

REFERENCES

1. Afshari A, Yaghobi R, Azarpira N, Zadeh BG, Hosseini SAM, Darbouy M, et al. Evaluation of Interleukin-21, 23 and 27 mRNA Expression and Protein Level in Liver Transplant Patients. Iran J Allergy Asthma Immunol 2018; 17(4):298-307.
2. Gaddis ML. Statistical methodology: IV. Analysis of variance, analysis of co variance, and multivariate analysis of variance. Academic emergency medicine 1998; 5(3):258-65.

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