



Letter to Editor

Peak C-reactive protein levels do not predict 30-day mortality for bacteremia: A retrospective cohort study



Dear Editor,

We were interested to read the article “Peak C-reactive protein levels do not predict 30-day mortality for bacteremia: A retrospective cohort study” authored by Ken Kurisu and colleagues published in *Journal of Infection and Chemotherapy* [1]. The authors aimed to determine the association between peak C-reactive protein (CRP) levels and prognosis in patients with bacteremia. However, some statistical issues need to be taken seriously in this study.

In the multivariate logistic regression analysis, in table 3, we found that some potential confounding factors with very wide confidence intervals (CIs), such as β -hemolytic streptococci (OR = 27.750, 95% CI 1.140–675.529, $P = 0.041$), intestines and peritoneum (OR = 49.315, 95% CI 5.368–453.06, $P = 0.001$), skin and soft tissue (OR = 16.086, 95% CI 1.542–167.790, $P = 0.021$), chronic pulmonary disease (OR = 21.724, 95% CI 2.369–199.225, $P = 0.007$) et al. These super large CIs are problematic and data sparsity was reported as main reason [2]. Data sparsity means that the number of variables was not sufficient to obtain an accurate reflection of the relationship between the variables. There are various ways to solve the problem of data sparsity bias, penalization method is the most effective and commonly used method [2]. Another important reason for large CIs is the collinearity among the confounding factors. In multivariate logistic regression analysis, collinearity among the variables should be checked first [3]. Therefore, we suggest that the author apply the above statistic methods to minimize bias.

Another point worth noting: Ken Kurisu and colleagues seem to forget to calculate the minimum acceptable sample size in their study. The authors need to demonstrate their sample size meets the minimum sample size. In theory, at least 10–20 events per variable (EPV) are needed in multivariate analysis. Therefore, when $EPV \geq 10$, it can provide sufficient statistical power in multivariate analysis model [4]. If the minimum EPV is not met, some statistically important variables may be ignored because of the insufficient power.

Conflicts of interest

None.

Acknowledgment

None.

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10 July 2019

Available online 10 September 2019

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