Title: Response letter to Eosinophil count in severe coronavirus disease 2019 (COVID-19)

Author, Affiliation:

Guo-Qing Qian[1], Xie Zhang[2], Ada Hoi Yan Ma[3], Nai-Bin Yang[1]

[1]Department of General Internal Medicine, Ningbo City First Hospital, Ningbo, Zhejiang Province, China.

[2]Department of Respiratory Medicine, Yueqing People's Hospital, Wenzhou, Zhejiang Province, China

[3]Nottingham University Business School, University of Nottingham Ningbo China, Ningbo, Zhejiang Province, China.

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Name and Address for correspondence:

Corresponding Author: Guo-Qing Qian

Address: Department of General Internal Medicine, Ningbo First Hospital, No. 59 Liuting Street, Haishu District, Ningbo, Zhejiang Province, China, 315010

Email: bill.qian@outlook.com

Main text

Dear Sir,

Response letter to Eosinophil count in severe coronavirus disease 2019 (COVID-19).

This letter is in response to the letter to the editor by Dr Lippi and Dr Henry, which raised the concern whether eosinopenia is associated with the severity of COVID-19 in patients. They pooled 294 patients from 3 studies, including 75 of whom (25.5%) with severe COVID-19, and demonstrated that the eosinophil count was not observed to be significantly different between mild or severe COVID-19 cases[1].

In our previous study we reported that 47 (51.65%) patients had eosinopenia ($<0.02 \times 10^9$/L) out of 91 COVID-19 patients, and there is no difference between mild and severe pneumonia groups[2]. We found that eosinophil counts were positively correlated to lymphocyte count (r = 0.305, P < 0.001) in our sample. Similarly, Zhang and colleagues reported that 52.9% of their 140 COVID-19 patients had eosinopenia ($<0.02 \times 10^9$/L), and the eosinophil count is positively associated with lymphocyte count in mild (r = 0.449, P < 0.001) and severe (r = 0.486, P < 0.001) cases of COVID-19[3]. Interestingly, lymphopenia was common in COVID-19 patients (28%-82.1%)[2-4]. Thus, we could improve early detection of SARS-CoV-2 infection based on fever, upper respiratory symptoms, lymphopenia and eosinophilia. However, the relationship between eosinopenia and SARS-CoV-2 infection needs further study.

Eosinopenia has been described as a biomarker in bacterial infection since 1893, and has been used as a biomarker to discriminate between infectious and non-infectious diseases, as well as prognostic, which is not only performed in intensive care units, but also investigated in internal medicine departments[5,6]. Moreover, eosinopenia is significantly associated with the severity of paediatrics diseases and could differentiate bacterial from aseptic meningitis[7]. Eosinopenia could be due to the sequestration of eosinophils by chemokines into the inflammation sites or the generation of eosinophils being suppressed in the bone marrow.

However, regarding the diagnostic value of eosinopenia in COVID-19 is still unclear. It is easily to detect the level of eosinophil count and very cost-effectiveness. We suggest that the presence of eosinopenia will help the physician to realize the presence of infection. We need a large number of cases to reveal the sensitivity and specificity of eosinophil count in COVID-19.

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