Journal of Geriatric Cardiology (2017) 14: 780

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The relationship between neutrophil-to-lymphocyte ratio and major cardiovascular events in elderly patients with chronic heart failure

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J Geriatr Cardiol 2017; 14: 780. doi:10.11909/j.issn.1671-5411.2017.12.010

Keywords: Chronic heart failure; Major cardiovascular events; Neutrophil-to-lymphocyte ratio

We have read with great interest a reader's letter that addresses several important topics.[1]

The first topic concerns inflammatory markers analyzed in study patients. We did not include information on inflammatory markers, such as C-reactive protein (CRP), tumor necrosis factor-α, or interleukin-6, partly because such inflammatory markers are more expensive and difficult to obtain in a clinical practice compared to the neutrophil-to-lymphocyte (N/L) ratio. That lack of information is one of our study's limitations. To study the relationship between the N/L ratio and CRP level, we added the CRP data. The CRP levels in the total study cohort, in patients who had major cardiovascular events (MCEs) and in patients who did not have MCEs, were (0.387 ± 0.347), (0.443 ± 0.372) and (0.362 ± 0.332) ($P < 0.001$), respectively. We used the receiver operating characteristic (ROC) curve based on a univariate model to examine the ability of CRP levels to predict MCEs; the area under the curve was 0.564 ($P < 0.001$, 95% CI: 0.531–0.597). The CRP level and N/L ratio exhibited a positive correlation ($r = 0.261$, $P < 0.001$) using the Spearman correlation test.

Second, patients with concomitant heart failure (HF) and atrial fibrillation (AF) indeed have a worse prognosis.[2] However, numerous prognostic markers, such as AF, hypertension, smoking, obesity, diabetes, renal impairment, sleep apnea, and coronary artery disease and/or HF hospitalization, have been identified in patients with HF.[3] Although AF was lower in the MCE group in our study, certain prognostic factors with high hazard ratios that we did not include might affect the prognosis of HF when combined with those we did include in the multivariate Cox model. Thus, AF may make the prognosis of HF worse in the multivariate Cox model. In addition, the reader's observation that New York Heart Association (NYHA) class IV patients are unsuitable for survival studies because of the expectation of a much-shortened lifespan is very relevant. Even though our study had very few NYHA class IV patients (9.1% in the total study cohort and 14.2% in the patients who had MCE), we will focus our attention primarily on NYHA I-II patients in the future.

Third, we are sorry to have mistakenly written NYHA as HYHA. We express our sincere apologies for this mistake.

Finally, we agree that multicenter randomized trials with large sample sizes and long-term follow-up should be conducted in the future, as larger trials would make our conclusions more reliable. Our investigation is still underway. We hope that more markers, such as the N/L ratio, that are inexpensive and can be readily obtained at the time of admission for every HF patient will be observed and that the relationship between N/L ratio and poor prognosis in HF will be confirmed in more research populations.

References

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