COMMENTARY

Comment on "Assessment of Neutrophil and Neutrophil/lymphocyte ratio in coronary collateral developed patients with acute coronary syndrome"

Alparslan Kurtul[1]

1. Hatay Mustafa Kemal University Faculty of Medicine, Department of Cardiology, Hatay, Turkey.

http://dx.doi.org/10.1590/1806-9282.66.7.1013

Coronary collateral circulation (CCC) development is an adaptive response to acute or chronic myocardial ischemia and serves as a conduit bridging the significantly narrowed epicardial coronary artery.[1] Theoretically, well-developed CCC is expected to protect the myocardium from ischemia, improve residual myocardial contractility, and thus reduce anginal symptoms and adverse events. Indeed, many studies have shown that good collaterals improve prognosis in patients with chronic coronary syndrome.[2-4] However, in the setting of acute coronary syndrome (ACS), the impact of CCC on mortality is still not fully clarified. On the one hand, there are published studies showing that a well-developed CCC is beneficial on mortality in ACS[5-7], on the other hand, some publications present that the presence of CCC is not beneficial even related to increased mortality in these patients.[8-9]

The role of inflammation in critical myocardial ischemia, which is the primary stimulus for CCC development, has been previously shown.[10,11] In the settings of ACS, there are conflicting results in publications on this subject as well. For example, while İleri and his colleagues[12] found that neutrophil-to-lymphocyte ratio (NLR), together with the presence of diabetes mellitus, total white blood cell and neutrophil counts, was an independent positive predictor of poor CCC; on the contrary, Tenekecioglu et al.[13] concluded that higher NLR was significantly associated with good CCC development in patients with ACS.

In their original article, Mansiroglu et al.[14] compared the neutrophil count and NLR in patients with coronary collateral developed ACS. They reported a significant difference in the number of neutrophil counts and NLR among the types of ACS, namely, NLR and neutrophil counts were significantly higher in the ST-elevation myocardial infarction (STEMI) group in comparison with non-STEMI and unstable angina pectoris groups. The results of this study suggest that the development of CCC is positively affected in the case of STEMI, in which there is the highest inflammatory burden. It would be better if the information about the short and long term clinical results of the study patients were also known.

Despite the advances regarding the knowledge about CCC development, which is mostly from inflammatory marker-based retrospective studies, I think that there are still gaps in respect to the clinical importance of coronary collaterals in the settings of ACS. Further large prospective studies are needed to investigate the association of CCC with inflammation and the prognostic significance of coronary collaterals in ACS patients.

DATE OF SUBMISSION: 02-Feb-2020
DATE OF ACCEPTANCE: 27-Feb-2020
CORRESPONDING AUTHOR: Alparslan Kurtul
Hatay Mustafa Kemal University, Tayfur Ata Sokmen Medicine of Faculty, Department of Cardiology, Antakya-Hatay, Turkey.
Tel: +90 506 235-8669
E-mail: alpkurtul@yahoo.com

REFERENCES

1. Levin DC. Pathways and functional significance of the coronary collateral circulation. Circulation 1974;50:831–837.
2. Meier P, Gloekler S, Zbinden R, Beckh S, de Marchi SF, Zbinden S, et al. Beneficial effect of recruitable collaterals: a 10-year follow-up study in patients with stable coronary artery disease undergoing quantitative collateral measurements. Circulation 2007;116:975-983.
3. Regieli JJ, Jukema JW, Nathoe HM, Zwinderman AH, Ng S, Grobbee DE, et al. Coronary collaterals improve prognosis in patients with ischemic heart disease. Int J Cardiol 2009;132:257-262.
4. Levin DC. Pathways and functional significance of the coronary collateral circulation. Circulation 1974;50:831-837.
5. Charney R, Cohen M. The role of the coronary collateral circulation in limiting myocardial ischemia and infarct size. Am Heart J 1993;126:937-945.
6. Elias J, Hoebers LPC, van Dongen IM, Claessen BEPM, Henriques JPS. Impact of Collateral Circulation on Survival in ST-Segment Elevation Myocardial Infarction Patients Undergoing Primary Percutaneous Coronary Intervention With a Concomitant Chronic Total Occlusion. JACC Cardiovasc Interv 2017;10:906-914.
7. Bhatnagar UB, Nelson G, Stys A. Collateral Flow Reversal: Exploring Protective Role of Collateral Circulation in Acute Coronary Syndrome. S D Med 2019;72:174-177
8. Meier P, Lansky AJ, Fahy M, Xu K, White HD, Bertrand ME, et al. The impact of the coronary collateral circulation on outcomes in patients with acute coronary syndromes: results from the ACUITY trial. Heart 2014;100:647-651.
9. Kurtul A, Ozturk S. Prognostic value of coronary collaterals in patients with acute coronary syndromes. Coron Artery Dis 2017;28:406-412.
10. Gulec S, Ozdemir AO, Maradit-Kremers H, Dincer I, Atmaca Y, Erol C. Elevated levels of C-reactive protein are associated with impaired coronary collateral development. Eur J Clin Invest 2006;36:369-375.
11. Kerner A, Gruberg L, Goldberg A, Roguin A, Lavie P, Lavie L, et al. Relation of C-reactive protein to coronary collaterals in patients with stable angina pectoris and coronary artery disease. Am J Cardiol 2007;99:509-512.
12. İleri M, Güray Ü, Yetkin E, Gürsoy HT, Bayır PT, Şahin D, et al. A new risk scoring model for prediction of poor coronary collateral circulation in acute non-ST-elevation myocardial infarction. Cardiol J 2016;23:107-113.
13. Tenekecioglu E, Yılmaz M, Karaagac K, Bekler A, Aslan B, Demir S, et al. Predictors of coronary collaterals in patients with non ST-elevated acute coronary syndrome: the paradox of the leukocytes. Cent Eur J Immunol 2014;39:83-90.
14. Asli Kurtar Mansiroglu AK ; Sincer I; Gunes Y - Assessment of neutrophil and neutrophil/lymphocyte ratio in coronary collateral developed patients with acute coronary syndrome - Rev Assoc Med Bras 2020; 66(7):954-959.