LETTER TO THE EDITOR

Savaş Acikgoz MD¹
Meltem R Ege MD²
Yesim Guray MD³

¹ Kavaklıdere Umut Hospital, Clinic of Cardiology, Ankara, Turkey

² Koru Hospital, Clinic of Cardiology, Ankara, Turkey

³ Ankara Yüksek İhtisas Education and Research Hospital, Clinic of Cardiology, Ankara, Turkey

Re: Relationship between mean platelet volume and left ventricular systolic function in patients with metabolic syndrome and ST-elevation myocardial infarction

Dear Editor;

We have read with great interest the recently published report of Yazici *et al.* [1], which investigates the relationship between mean platelet volume (MPV) and left ventricular systolic function in patients with metabolic syndrome and ST-elevation myocardial infarction. The authors demonstrated that increased MPV on admission can be associated with the degree of left ventricle systolic depression in these patients.

It has been reported that MPV, a measure of platelet size, reflects platelet function and activity [2]. In subjects with established cardiovascular disease, elevated MPV may be a marker for adverse cardiovascular events [3]. In a recent study by Yilmaz *et al.* [4], higher MPV values were found to be associated with greater risk of having non-ST-elevation acute coronary syndrome and ischemic complications in patients presenting with acute coronary syndrome. Pereg *et al.* [5] also reported that in patients with ST-elevation myocardial infarction who was treated with thrombolysis, higher MPV values were found to be correlated with thrombolysis failure. Moreover, Huczek *et al.* [6], found that MPV was an independent predictor of impaired angiographic reperfusion and six-month mortality in patients with ST-elevation myocardial infarction treated with primary percutaneous coronary intervention. The concept of optimal reperfusion must include not only early and sustained epicardial patency but also optimal microvascular flow and tissue reperfusion [7]. Larger platelets with higher MPV may create reperfusion abnormalities through secretion of prothrombotic and vasoconstrictor mediators, such as thromboxane, serotonin and thrombin, and they may also contribute to leukocyte-mediated injury by secreting a variety of inflammatory mediators [8,9].

Clin Invest Med 2012; 35 (2): E46-E47.

Correspondence to:

Dr. Meltem Refiker Ege
Koru Hospital, Clinic of Cardiology
Oğuzlar Mah. 1377 sok. No 21, Balgat, Ankara, Turkey
e-mail: drmeltemege@yahoo.com.tr

On the other hand, metabolic syndrome is associated with an increased risk of cardiovascular disease and a higher incidence of severe heart failure following acute myocardial infarction [10,11]. In a recent study by Zeller *et al.* [12], the presence of metabolic syndrome was found to be associated with worse in-hospital outcomes and a higher risk of development of severe heart failure.

The coupling of higher MPV (that is, more active platelets) with the prothrombotic and proinflammatory state found in metabolic syndrome can explain the findings of the study by Yazici and coworkers [1]. Metabolic syndrome is highly prevalent in patients with acute ST-elevation myocardial infarction and is known to have a detrimental impact on short term outcome. Therefore, in the light of the findings of this study, in the setting of acute myocardial infarction, patients with metabolic syndrome and high MPV should be evaluated for the presence of left ventricular systolic dysfunction as the authors have demonstrated that increased MPV on admission can be associated with the degree of left ventricular systolic depression in this group of patients.

References

1. Yazici HU, Poyraz F, Sen N, Tavit Y, Turfan M, Tulmaç M, Abaci A. Relationship between mean platelet volume and left ventricular systolic function in patients with metabolic syndrome and ST-elevation myocardial infarction. *Clin Invest Med.* 2011 Dec 1;34(6):E330. *Clin Invest Med.* 2011;34:E330.
2. Park Y, Schoene N, Harris W. Mean platelet volume as an indicator of platelet activation: methodological issues. *Platelets.* 2002 ;13:301-6.
3. Trip MD, Cats VM, van Capelle FJ, Vreken J. Platelet hyperactivity and prognosis in survivors of myocardial infarction. *N Engl J Med.* 1990 ;322:1549-54.
4. Yilmaz MB, Cihan G, Guray Y, Guray U, Kisacik HL, Sasmaz H, Korkmaz S. Role of mean platelet volume in triaging acute coronary syndromes. *J Thromb Thrombolysis.* 2008 ;26:49-54.
5. Pereg D, Berlin T, Mosseri M. Mean platelet volume on admission correlates with impaired response to thrombolysis in patients with ST-elevation myocardial infarction. *Platelets.* 2010;21:117-21.
6. Huczek Z, Kochman J, Filipiak KJ, Horszczaruk GJ, Grabowski M, Piatkowski R, Wilczynska J, Zielinski A, Meier B, Opolski G. Mean platelet volume on admission predicts impaired reperfusion and long-term mortality in acute myocardial infarction treated with primary percutaneous coronary intervention. *J Am Coll Cardiol.* 2005; 46:284-90.
7. Bolognese L, Neskovic AN, Parodi G, Cerisano G, Buonamici P, Santoro GM, Antoniucci D. Left ventricular remodeling after primary coronary angioplasty: patterns of left ventricular dilation and long-term prognostic implications. *Circulation.* 2002; 106:2351-7.
8. Golino P, Ashton JH, Buja LM, Rosolowsky M, Taylor AL, McNatt J, Campbell WB, Willerson JT. Local platelet activation causes vasoconstriction of large epicardial canine coronary arteries in vivo. Thromboxane A2 and serotonin are possible mediators. *Circulation.* 1989 ;79:154-66.
9. Aziz KA, Cawley JC, Treweek AT, Zuzel M. Sequential potentiation and inhibition of PMN reactivity by maximally stimulated platelets. *J Leukoc Biol.* 1997 ;61:322-8.
10. Cha BS, Kim HJ. Metabolic syndrome and cardiovascular disease. *Korean Circ J* 2003; 33:645-52.
11. Zeller M, Steg PG, Ravisy J, Laurent Y, Janin-Manificat L, L'Huillier I, Beer JC, Oudot A, Rioufol G, Makki H, Farnier M, Rochette L, Vergès B, Cottin Y; Observatoire des Infarctus de Côte-d'Or Survey Working Group. Prevalence and impact of metabolic syndrome on hospital outcomes in acute myocardial infarction. *Arch Intern Med.* 2005 ;165:1192-8.
12. Zeller M, Steg PG, Ravisy J, Laurent Y, Janin-Manificat L, L'Huillier I, Beer JC, Oudot A, Rioufol G, Makki H, Farnier M, Rochette L, Vergès B, Cottin Y; Observatoire des Infarctus de Côte-d'Or Survey Working Group. Prevalence and impact of metabolic syndrome on hospital outcomes in acute myocardial infarction. *Arch Intern Med.* 2005 ;165:1192-8.