

Left ventricular function after recanalization of chronic total occlusion

Esra Gucuk Ipek,^I Yesim Guray,^{II} Umit Guray^{III}

^I Polatli Hospital, Department of Cardiology, Ankara/Turkey. ^{II} Yuksek Ihtisas Education and Research Hospital, Department of Cardiology, Ankara/Turkey.

^{III} Numune Education and Research Hospital, Department of Cardiology, Ankara/Turkey.

Email: esragucuk@hotmail.com

Tel.: 90 505 8956416

Dear Editors,

We read with great interest the article by Erdogan et al. that was recently published in *Clinics* (1). In this study, the authors evaluated the role of novel echocardiographic techniques in detecting left ventricular functional recovery after successful percutaneous coronary intervention to treat chronic total occlusion. Their study highlights the benefits of restoring blood flow in symptomatic patients and in patients with detectable ischemia in the territory of the occluded vessel. Although the authors did a great job of providing a broad review of echocardiographic data obtained from a considerable number of patients, there are certain missing points that we wish to emphasize.

The authors concluded that the improvements in the strain parameters were more significant in patients with an ejection fraction $\geq 50\%$ and less significant in patients with diabetes. However, they did not use a multivariate regression analysis to adjust for other potential confounders. If they had performed a regression analysis, the authors would have provided more useful information about the impact of percutaneous coronary intervention on different groups. Without an accurate statistical analysis, it is not possible to draw conclusions about the benefits of this treatment in subgroups such as diabetics or patients with a higher ejection fraction.

In previous studies, the duration of the occlusion, collateral circulation, and previous myocardial infarction were found to be predictors of the restoration of systolic function after percutaneous intervention (2-5). None of these parameters was evaluated in this research. In a recent study, the influence of the recanalization of chronic total occlusion on left ventricular function was shown using three-dimensional echocardiography. In that study, left ventricular function improved in patients with rich collateral circulation, but no significant change was found in patients with a previous myocardial infarction. In another study, the recovery of left ventricular function was associated with the transmural extent of the myocardial scar, suggesting the impact of previous infarction (6).

Given the heterogeneity of the occluded vessels in the study by Erdogan et al., it would have been valuable to provide additional regional wall motion analyses. In a study by Ermis et al., coronary intervention had a positive impact on both global and regional left ventricular function in patients with chronic coronary artery occlusion (7). In another study, which used magnetic resonance imaging, early and late improvements in regional myocardial function were observed in the territory of the occlusion (6).

In conclusion, Erdogan et al. demonstrated the benefits of revascularization for left ventricular function in chronic total occlusion. However, a more detailed history of the patients, additional regional wall motion analyses, and a multivariate regression model would have provided valuable information about selecting appropriate patients for this procedure.

REFERENCES

1. Erdogan E, Akkaya M, Bacaksiz A, Tasal A, Sonmez, Elbey MA, et al. Early assessment of percutaneous coronary interventions for chronic total occlusions analyzed by novel echocardiographic techniques. *Clinics*. 2013;68(10):1333-7, [http://dx.doi.org/10.6061/clinics/2013\(10\)07](http://dx.doi.org/10.6061/clinics/2013(10)07).
2. Fettser DV, Batyraliev TA, Niiazova-Karben ZA, Sercelek A, Abdramanov KA, Belenkov IuN. Clinical and angiographical factors influencing improvement of left ventricular function after implantation of bare-metal stents in patients with chronic total occlusions of coronary arteries. *Kardiologiya*. 2011;51(2):52-8.
3. Yue WW, Huangfu FT, Yin J, Wang T, Wang GF, Jia RY, et al. Assessment of recanalization of chronic total occlusions on left ventricular function in patients with or without previous myocardial infarction by real-time three-dimensional echocardiography. *Cell Biochem Biophys*. 2012;62(1):83-6, <http://dx.doi.org/10.1007/s12013-011-9262-9>.
4. Danchin N, Angioi M, Cador R, Tricoche O, Dibon O, Juillière Y, et al. Effect of late percutaneous angioplastic recanalization of total coronary artery occlusion on left ventricular remodeling, ejection fraction, and regional wall motion. *Am J Cardiol*. 1996;78(7):729-35, [http://dx.doi.org/10.1016/S0002-9149\(96\)00411-0](http://dx.doi.org/10.1016/S0002-9149(96)00411-0).
5. Chung CM, Nakamura S, Tanaka K, Tanigawa J, Kitano K, Akiyama T, et al. Effect of recanalization of chronic total occlusions on global and regional left ventricular function in patients with or without previous myocardial infarction. *Catheter Cardiovasc Interv*. 2003;60(3):368-74, <http://dx.doi.org/10.1002/ccd.10641>.
6. Kirschbaum SW, Baks T, van den Ent M, Sianos G, Krestin GP, Serruys PW, et al. Evaluation of left ventricular function three years after percutaneous recanalization of chronic total coronary occlusions. *Am J Cardiol*. 2008;101(2):179-85, <http://dx.doi.org/10.1016/j.amjcard.2007.07.060>.
7. Ermis C, Boz A, Tholakanahalli V, Yalcinkaya S, Semiz E, Sancaktar O, et al. Assessment of percutaneous coronary intervention on regional and global left ventricular function in patients with chronic total occlusions. *Can J Cardiol*. 2005;21(3):275-80.

Copyright © 2014 CLINICS – This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

No potential conflict of interest was reported.

DOI: 10.6061/clinics/2014(04)13