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Letter to Editor

Thrombus aspiration might reduce the need for concomitant stenting in young patients with STEMI

Atila Iyisoy, Murat Celik, Turgay Celik, Baris Bugan, Uygar Cagdas Yuksel

Department of Cardiology, Gulhane Military Medical Academy, Ankara, Turkey

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We have greatly enjoyed reading the article by Jamil and coworkers entitled "Lone aspiration thrombectomy" without stenting in young patients with ST elevation myocardial infarction [1]. In that successfully planned study, the authors aimed to research the safety of a strategy of lone thrombus aspiration (TA), without added balloon dilation or stenting, in selected ST elevation myocardial infarction (STEMI) patients, and found that TA alone is a feasible and safe procedure in selected young patients with acute STEMI. The results are presented well — thanks to the authors for their contribution.

One of the major challenges of primary PCI in the setting of STEMI is related to thrombus burden and distal embolization, preventing adequate myocardial perfusion. Several studies and meta-analysis reported that distal protection devices and TA catheters have diminished this unwanted process [2-5]. TA was found effective and beneficial for reducing infarct size, and improving myocardial perfusion and clinical outcome improvements in the setting of STEMI. TA can be challenging and ineffective and the risk of the distal embolization is also very high in the presence of culprit high-grade stenotic calcific plaques with thrombus, especially in old patients. However, the culprit lesion in young patients with STEMI has minimal atherosclerotic plaque, and STEMI may also occur due to stress and/or heavy exercise, resulting in damage to the endothelium but not a ruptured plaque in young patients. Therefore, TA can be effective in removing thrombotic material from culprit low-grade stenotic plaques and increasing myocardial perfusion in young patients with STEMI. Moreover, there is no reported data in literature comparing the burden of thrombus and the effectiveness of TA according to the age of patients in the setting of STEMI. In our recent oral presentation presented at the congress of EuroPCR 2011, we demonstrated that TA was more beneficial on decreasing thrombus burden and improving myocardial perfusion in younger patients with STEMI (≤45 years) than older patients with STEMI (>45 years), and the effective TA caused a decrease on the number of implanted stents in young patients, because of the observation of minimal residual atherosclerotic plaque after TA [6].

One of the possible explanations for why TA caused conflicting findings on myocardial reperfusion, infarct size, and clinical outcome is the nature of embolized material. The embolized material to distal bed after TA is usually composed of thrombus embolization in young patients, whereas it is often consisted of atherosclerotic particles with minimal thrombus in older patients. Moreover, in a recent meta-analysis, it has been shown that benefit of TA was more evident in patients who received GP IIb/IIIa inhibitors [7]. Because glycoprotein IIb/IIIa inhibitors might be more useful in young patients than older patients related to the nature of embolized material. In the present study, the authors did not perform an analysis of aspirated material. However, analyzing the histopathological characteristics of thrombus aspirates retrieved from the patients with STEMI could be beneficial in order to understand the efficacy of TA and/or glycoprotein IIb/IIIa inhibitors in STEMI patients.

In conclusion, we strongly believe that TA might have potential beneficial effects on clinical outcomes and might reduce the need for concomitant coronary stenting in young STEMI patients who have minimal atherosclerotic plaque with heavy large thrombus burden. Additionally, we suggest that young patients might provide more benefits from thrombolytic therapy as the first approach instead of primary PCI.

Address correspondence to: Dr. Murat Celik, Department of Cardiology, Gulhane School of Medicine, 06018 Etlik-Ankara, Turkey. Tel: +90-312-3044261; Fax: +90-312-3044250; E-mail: drcelik00@hotmail.com

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