

Response to Letter Regarding Article, "The Long-Term Effect of Coronary Stenting on Epicardial and Microvascular Endothelial Function"

Seong-Hoon Lim, Andreas J. Flammer, Myeong Ho Yoon, Rajiv Gulati, Verghese Mathew, Charanjit S. Rihal, Amir Lerman, Ryan J. Lennon and Lilach O. Lerman

Circ Cardiovasc Interv. 2013;6:e8

doi: 10.1161/CIRCINTERVENTIONS.112.974972

Circulation: Cardiovascular Interventions is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Copyright © 2013 American Heart Association, Inc. All rights reserved.

Print ISSN: 1941-7640. Online ISSN: 1941-7632

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://circinterventions.ahajournals.org/content/6/1/e8>

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Circulation: Cardiovascular Interventions* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the [Permissions and Rights Question and Answer](#) document.

Reprints: Information about reprints can be found online at:
<http://www.lww.com/reprints>

Subscriptions: Information about subscribing to *Circulation: Cardiovascular Interventions* is online at:
<http://circinterventions.ahajournals.org/subscriptions/>

Correspondence

Response to Letter Regarding Article, “The Long-Term Effect of Coronary Stenting on Epicardial and Microvascular Endothelial Function”

We highly appreciate the letter regarding our recently published study on the long-term effect of stenting in patients presenting with chest pain,¹ where Dr Kaneda and Dr Tarashima raised several important comments.

Indeed, knowledge about the frequency of patients returning with symptoms after stent implantation, but no significant stenosis, would add interesting information and should be evaluated in further studies. The majority of patients included in our analysis were transferred from outside hospitals to our tertiary-center for further evaluation of chest pain, despite nonstenotic vessels, thus representing a selected patient population. In our experience, few patients present with chest pain and nonstenotic vessels in the long-term, after stent implantation; however, we do not have this data available for this study.

Our protocol excluded patients with chest pain who had significant stenotic coronary artery disease based on angiographic findings. Intravascular ultrasound—although assessed in some patients—was not routinely done, and thus we cannot provide the frequency of new nonsignificant lesions at the segment distal to the implanted stent, as suggested by the authors of the correspondence letter.

We agree with the notion that endothelial dysfunction might be time-dependent and different between different stent types. In response to this important comment, we conducted an additional analysis of our data. Although the numbers of observations are quite small, there is no evidence, according to the interaction *P* values, that the endothelial function/duration relationship is different between drug eluting stents and bare metal stents. However, the small numbers in each group limits conclusions.

Finally, the point that many patients may show marked coronary vasoconstriction in response to acetylcholine even before stent implantation, particularly patients with advanced coronary artery disease,² is very well taken. Of course, we cannot exclude that microvascular dysfunction already existed before stent implantation in our study, because such an evaluation usually is not performed prior to stent implantation. Potentially to correct for this limitation, we would like to stress that our control group consisted of patients who were all evaluated for vascular function because of chest pain as well.

None.

Disclosures

Seong-Hoon Lim, MD, PhD
Division of Cardiovascular Diseases
Mayo Clinic
Rochester, MN; and
Division of Cardiology
Dankook University Hospital
Cheonan, Korea

Andreas J. Flammer, MD
Myeong Ho Yoon, MD, PhD
Rajiv Gulati MD, PhD
Verghese Mathew, MD
Charanjit S. Rihal, MD
Amir Lerman, MD
Division of Cardiovascular Diseases
Mayo Clinic
Rochester, MN

Ryan J. Lennon, MS
Division of Biomedical Statistics and Informatics
Mayo Clinic
Rochester, MN

Lilach O. Lerman, MD, PhD
Division of Nephrology and Hypertension
Mayo Clinic
Rochester, MN

References

1. Lim SH, Flammer AJ, Yoon MH, Lennon RJ, Gulati R, Mathew V, Rihal CS, Lerman LO, Lerman A. The long-term effect of coronary stenting on epicardial and microvascular endothelial function. *Circ Cardiovasc Interv.* 2012;5:523–529.
2. Flammer AJ, Anderson T, Celermajor DS, Creager MA, Deanfield J, Ganz P, Hamburg NM, Lüscher TF, Shechter M, Taddei S, Vita JA, Lerman A. The assessment of endothelial function: from research into clinical practice. *Circulation.* 2012;126:753–767.