Korean Circ J. 2020 Mar;50(3):234-235
https://doi.org/10.4070/kcj.2020.0041
pISSN 1738-5520·eISSN 1738-5555

KCJ Korean Circulation Journal

Editorial

Optimal Timing of Coronary Intervention in Non-Culprit Lesion in ST Elevation Myocardial Infarction with Multi-Vessel Disease

Jongkwon Seo, MD[1], and Jung-Sun Kim, MD, PhD[2]

[1]Division of Cardiology, Department of Internal Medicine, Sanggye Paik Hospital, Inje University College of Medicine, Seoul, Korea
[2]Division of Cardiology, Severance Cardiovascular Hospital, Yonsei University College of Medicine, Seoul, Korea

▸ See the article "One-Year Clinical Outcomes between Single- versus Multi-Staged PCI for ST Elevation Myocardial Infarction with Multi-Vessel Coronary Artery Disease: from Korea Acute Myocardial Infarction Registry-National Institute of Health (KAMIR-NIH)" in volume 50 on page 220.

Received: Feb 1, 2020
Accepted: Feb 14, 2020

Correspondence to
Jung-Sun Kim, MD, PhD
Division of Cardiology, Severance Cardiovascular Hospital, Yonsei University College of Medicine, 50-1, Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea.
E-mail: kjs1218@yuhs.ac

Conflict of Interest
The authors have no financial conflicts of interest.

The contents of the report are the author's own views and do not necessarily reflect the views of the *Korean Circulation Journal*.

Primary percutaneous coronary intervention (PCI) is a mainstay treatment option for patients with ST elevation myocardial infarction (STEMI). According to the previous studies, more than 50% of patients with STEMI have a multi-vessel disease (MVD). The culprit lesion for primary PCI can be identified by electrocardiography (ECG), echocardiography, coronary angiography (CAG) and clinical features. In most cases, the culprit lesion should be treated in the setting of primary PCI. However, there have been issues for the strategy for remaining non-culprit lesion regarding timing to perform a PCI.

Previous studies have shown complete revascularization is associated with better prognosis compared with culprit lesion only PCI in patients with STEMI. In the Preventive Angioplasty in Acute Myocardial Infarction (PRAMI) trial,[1] preventive PCI in non-infarct-related coronary arteries with significant stenosis was associated with 65% reduction of cardiovascular death, myocardial infarction (MI) and refractory angina. In another study with second generation stents, complete revascularization strategy also showed better outcomes with reduction of 44% of cardiovascular death than culprit lesion only PCI in STEMI patients with multi vessel disease.[2] However, there have been issued regarding interval of 2nd PCI of the remaining lesions to achieve complete revascularization after the treatment of culprit lesion.

In this current issue, Ahn et al.[3] investigated the optimal timing of non-culprit lesions PCI by using Korea Acute Myocardial Infarction Registry-National Institute of Health (KAMIR-NIH) data. A total of 606 patients with STEMI and multi-vessel coronary artery disease underwent complete revascularization including non-culprit lesions with significant stenosis. Authors compared 1-year clinical outcomes between multi-vessel single-stage PCI (SS PCI) group (n=325) and multi-vessel multi-staged PCI (MS PCI) group (n=195). At 1 year, MS PCI group showed a lower rate of all-cause mortality (hazard ratio [HR], 0.42; 95% confidence interval [CI], 0.19–0.92; p=0.030) compared with SS PCI group.

Recent European Society of Cardiology (ESC) guidelines recommended that the treatment for non-culprit lesions PCI should be considered before the discharge (class IIa, A). However,

the exact timing is still controversial and is needed to be investigated.[4] Current study may provide the important information that the timing of the second stage PCI is median 6 days before discharge in MS PCI group. This finding is consistent with result of other study. Kim et al.[5] presented optimal timing of PCI for non-culprit vessel in patients with STEMI and MVD was less than 7 days (2–6 days) after index PCI, but deferred staged PCI after 1 week of index PCI group was associated with the higher a composite of all-cause mortality, MI or repeat PCI (odds ratio [OR], 1.83; 95% confidence interval [CI], 1.06–3.18, p=0.031) as compared to group with simultaneous multi-vessel PCI group. It is also in line with the ESC guideline which recommend staged PCI before discharge in admission for primary PCI.

ESC guideline also suggested that non-infarct-related artery PCI during the index procedure should be considered in patients with cardiogenic shock (class IIa, C) based on a consensus opinion without randomized clinical trial. However, this study demonstrated all-cause mortality was high in the subgroup of cardiogenic shock (HR, 4.60; 95% CI, 1.536–13.774; p=0.006) in the SS PCI group. Furthermore, high risk patients such as age ≥65 years (HR, 4.00; 95% CI, 1.670–9.58, p=0.002), Killip class III/IV (HR, 7.32; 95% CI, 1.68–31.87; p=0.008), and creatinine clearance ≤60 mL/min (HR, 2.81; 95% CI, 1.10–7.18; p=0.031) showed higher all-cause mortality of the SS PCI group than those of MS PCI group. However, these findings should be interpreted with consideration of possible selection bias.

There was no clear evidence of clinical benefits between SS PCI and MS PCI as well as an optimal timing between the index procedure and staged PCI in MS PCI. However, this study implied clinical relevance for the timing of second stage PCI in patients with STEMI and MVD.

REFERENCES

1. Wald DS, Morris JK, Wald NJ, et al. Randomized trial of preventive angioplasty in myocardial infarction. *N Engl J Med* 2013;369:1115-23.
PUBMED | CROSSREF
2. Kwon SW, Park SD, Moon J, et al. Complete versus culprit-only revascularization for ST-segment elevation myocardial infarction and multivessel disease in the 2nd generation drug-eluting stent era: data from the interstellar registry. *Korean Circ J* 2018;48:989-99.
PUBMED | CROSSREF
3. Ahn KT, Oh JK, Seong SW, et al. One-year clinical outcomes between single- versus multi-staged PCI for ST elevation myocardial infarction with multi-vessel coronary artery disease: from Korea Acute Myocardial Infarction Registry-National Institute of Health (KAMIR-NIH). *Korean Circ J* 2020;50:220-33.
CROSSREF
4. Ibanez B, James S, Agewall S, et al. 2017 ESC guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: the task force for the management of acute myocardial infarction in patients presenting with st-segment elevation of the European Society of Cardiology (ESC). *Eur Heart J* 2018;39:119-77.
PUBMED | CROSSREF
5. Kim I, Kim MC, Jeong HC, et al. Optimal timing of percutaneous coronary intervention for nonculprit vessel in patients with ST-segment elevation myocardial infarction and multivessel disease. *Korean Circ J* 2017;47:36-43.
PUBMED | CROSSREF