Trial finds best strategy to select non-infarct–related artery lesions for intervention

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Selection of non-infarct related artery (IRA) lesions for intervention using fractional flow reserve (FFR) is superior to routine angiography-based selection in patients with acute myocardial infarction and multivessel disease. That's the finding of late breaking research presented in a Hot Line session on 28 August at ESC Congress 2022.

Principal investigator Professor Joo-Yong Hahn of Samsung Medical Center, Seoul, Republic of Korea said: "In patients with acute myocardial infarction and multivessel coronary artery disease, using FFR to select non-IRA lesions for percutaneous coronary intervention (PCI) was superior to selection of non-IRA lesions based on angiographic diameter stenosis regarding the risk of death, myocardial infarction, or repeat revascularization."

Randomized trials have consistently found that PCI of non-IRA lesions for complete revascularization in patients with ST-segment elevation myocardial infarction (STEMI) improves clinical outcomes compared with IRA-only PCI. ESC guidelines recommend that revascularization of non-IRA lesions should be considered in STEMI patients with multivessel disease during the index procedure or before hospital discharge. However, the optimal strategy to select targets for non-IRA PCI has not been clarified. Therefore, the FRAME-AMI trial compared FFR-guided PCI with angiography-guided PCI for non-IRA lesions among patients with acute myocardial infarction and multivessel disease.

FRAME-AMI was an investigator-initiated, open-label trial conducted at 14 sites in Korea. The trial randomly assigned patients with acute myocardial infarction and multivessel coronary artery disease who had undergone successful PCI of the IRA to undergo either (1) FFR-guided

PCI of non-IRA with FFR ≤0.80 or (2) angiography-guided PCI of non-IRA with >50% diameter stenosis. In both groups, complete revascularization during the index procedure was recommended. However, staged procedures during the index hospitalization were permitted at operators' discretion. The primary endpoint was a composite of all-cause death, myocardial infarction, or repeat revascularization.

Between August 2016 and December 2020, a total of 562 patients underwent randomization. The average age was 63 years and 16% were women. Non-IRA lesions were treated by immediate PCI after successful treatment of IRA in 337 patients (60.0%) and by staged procedure during the same hospitalization in 225 patients (40.0%). During a median follow up of 3.5 years (interquartile range 2.7–4.1 years), the primary endpoint occurred in 18 of 284 patients in the FFR group and 40 of 278 patients in the angiography group (Kaplan–Meier event rates at 4 years, 7.4% versus 19.7%; hazard ratio [HR] 0.43; 95% confidence interval [CI] 0.25–0.75; p=0.003).

The incidence of death was significantly lower in the FFR group compared with the angiography group, occurring in 5 patients versus 16 patients, respectively (Kaplan–Meier event rates at 4 years, 2.1% versus 8.5%; HR 0.30; 95% CI 0.11–0.83; p=0.020). The incidence of myocardial infarction was also significantly lower in the FFR group compared with the angiography group, occurring in 7 patients versus 21 patients, respectively (Kaplan–Meier event rates at 4 years, 2.5% versus 8.9%; HR 0.32; 95% CI 0.13–0.75; p=0.009). Ten patients in the FFR group had an unplanned revascularization compared with 16 patients in the angiography group, with no significant difference between the two groups (Kaplan–Meier event rates at 4 years, 4.3% versus 9.0%; HR 0.61; 95% CI 0.28–1.34; p=0.216).

Professor Hahn said, "The benefit of FFR-guided PCI on the primary

endpoint was consistent regardless of the type of myocardial infarction (STEMI or non-STEMI). Guidelines are unlikely to change solely based on the results of our trial, but in clinical practice, interventional cardiologists may choose to adopt FFR-guided decision making in patients with acute myocardial infarction and multivessel disease."

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