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EDITORIAL

Timing of Intervention in Non-ST Elevation Acute Coronary Syndromes

What Is the VERDICT?

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Unlike in patients with ST segment elevation myocardial infarction, where the culprit coronary artery is occluded, leading to transmural ischemia, patients presenting with non-ST segment elevation acute coronary syndromes (NSTE-ACS) usually have a patent culprit vessel with subendocardial ischemia. NSTE-ACS and ST segment elevation myocardial infarction are a continuum, and NSTE-ACS can progress to ST segment elevation myocardial infarction or complete vessel occlusion if left untreated. It is well established that an invasive approach compared with a conservative approach is beneficial in patients with NSTE-ACS.[1] What is less certain is whether early/urgent coronary angiography and intervention are beneficial in NSTE-ACS. The topic of timing of angiography in NSTE-ACS has been previously studied in randomized trials.[2–8] The largest, the TIMACS trial (Timing of Intervention in Acute Coronary Syndromes) (N=3031), compared early angiography and intervention in ≤24 hours versus delayed angiography >36 hours and found no difference in the primary outcome of death, myocardial infarction (MI), or stroke at 6 months (hazard ratio [HR], 0.85; 95% CI, 0.68–1.06).[3] However, there was a 28% reduction in the secondary outcome of death, MI, or refractory ischemia (HR, 0.72; 95% CI, 0.58–0.89). Furthermore, there was a sizeable benefit for the primary outcome with early angiography and intervention in those patients at highest risk (GRACE risk score >140; HR, 0.65; 95% CI, 0.48–0.89; *P*=0.005; *P* for interaction=0.0097).

In this issue of *Circulation*, Kofoed and colleagues[9] performed a randomized trial (N=2147) in patients with NSTE-ACS comparing early angiography (in ≤ 12 hours) to standard of care (angiography 48–72 hours) with a primary outcome of all-cause death, nonfatal recurrent myocardial infarction, hospital admission for refractory myocardial ischemia, or hospital admission for heart failure. The median time of angiography was 4.3 hours in the early group and 61.6 hours in the standard-of-care group. Percutaneous coronary intervention was performed in ≈50% of patients and coronary bypass surgery in 12%. About a third of patients had no significant coronary stenosis.

There was no difference in primary outcome (HR, 0.92; 95% CI, 0.78–1.08) at a median of 4.3 years. There was a significant reduction in nonfatal MI (HR, 0.73; 95% CI, 0.56–0.96) over follow-up that was not evident early (in ≤15 days). There were no reductions individually in the outcomes of death, refractory angina, or heart failure. In the high-risk subgroup (GRACE risk score >140), there was a benefit of early angiography for the primary outcome (HR, 0.81; 95% CI, 0.67–1.00).

These findings are consistent with the TIMACS trial, particularly the benefit in the high-risk subgroup (Figure).[3] There is a clear biological rationale that those at high-

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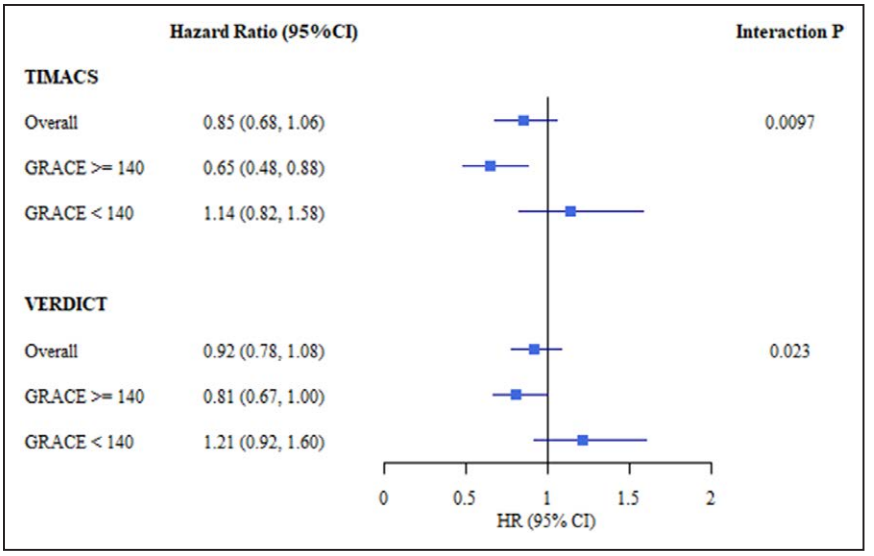

Figure. Subgroup analysis of high-risk patients (GRACE risk score >140) in VERDICT and TIMACS trials for the primary outcome. Primary outcome for VERDICT is death, MI, hospitalization for myocardial ischemia, or heart failure at a median follow-up of 4.3 years; and primary outcome for TIMACS is death, MI, or stroke at 6 months. HR indicates hazard ratio; MI, myocardial infarction; TIMACS, Timing of Intervention in Acute Coronary Syndromes; and VERDICT, Very Early vs Deferred Invasive Evaluation Using Computerized Tomography.

est risk are most likely to benefit from early angiography and intervention. These patients are more likely to have critical anatomy and, as a result, can deteriorate rapidly.

The reduction in MI in the VERDICT trial (Very Early vs Deferred Invasive Evaluation Using Computerized Tomography) should be interpreted with caution. There could be an ascertainment bias, such that percutaneous coronary intervention-related MIs are difficult to detect early compared with late procedures because biomarkers are still rising in the early period. In addition, one would expect that the largest difference in MI would be during initial hospitalization while patients in the late angiography group are waiting for angiography/intervention; however, the benefit for fatal MI was not observed early.

IMPLICATIONS FOR PRACTICE

The timing of angiography is an important question in patients presenting with NSTE-ACS. The VERDICT trial's findings support current guidelines. Most patients with NSTE-ACS do not need to be rushed to the catheterization laboratory early unless they have high-risk features (such as GRACE risk score >140).[10] This is good news for interventional cardiologists and cath laboratory personnel. Cath labs do not need to be opened off hours for patients with NSTE-ACS who are not at high risk. This allows the focus of emergency care to be on patients with ST segment elevation myocardial infarction, where there is a critical need to intervene as early as possible.

ARTICLE INFORMATION

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Disclosures

None.

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