The Synergy between Percutaneous Coronary Intervention (PCI) with Taxus and Cardiac Surgery (SYNTAX) score was developed to guide revascularization. It is computed using a sophisticated statistical model based on anatomical complexity and consists of the following 9 features: number of diseased vessels, location, left main lesion, triple-vessel disease, chronic total occlusion (CTO), tortuosity, bifurcation lesion, calcification, dominancy, and thrombus. Therefore, the score may correlate with the ischemic burden, but its degree depends on the component anatomical features.

In this issue of the Journal, Tanaka et al demonstrate that the SYNTAX score correlates well with myocardial ischemia as assessed on single-photon emission computed tomography.
In addition, FFR-guided PCI improves prognosis.

8. Functional flow reserve (FFR) also represents "functional stenosis." Separately, ischemia on SPECT represents "functional stenosis," treatment strategy.

9. Interpreting anatomical complexity and functional stenosis is crucial before deciding on the treatment strategy.

SYNTAX score and ischemia on SPECT should be dealt with separately. Ischemia on SPECT represents "functional stenosis," and the SYNTAX score represents anatomical complexity. Fractional flow reserve (FFR) also represents "functional stenosis." In addition, FFR-guided PCI improves prognosis. Recently, a FFR-guided SYNTAX score, termed the "functional SYNTAX score (FSS)" was introduced and reclassified one-third of the SYNTAX score cohort into lower-risk categories. Therefore, the indication of revascularization should be based on the ischemic burden of the functional stenosis, and then the therapeutic strategy should be made based on the SYNTAX score if applicable. Although FSS is a better tool than the SYNTAX score for assessing the extent and severity of coronary artery disease (CAD), it is an invasive, costly, time-consuming, and suboptimal tool for predicting PCI risk. Because partial revascularization is still an option in a patient with multiple lesions, the particular lesion that demonstrates ischemia on SPECT, i.e., the culprit lesion should be treated first. Surgical treatment of the other lesions can be deferred to optimal medical therapy, especially for some patients with high SYNTAX score because a relatively higher incidence of procedural complications can be anticipated. Otherwise, CABG should be considered.

SPECT is also useful to monitor therapeutic effect after initiation of anti-ischemic therapy and it predicts future cardiac events. Therefore, once partial revascularization is initiated, SPECT may play an important role in deciding whether additional aggressive treatment is needed. The ischemic burden on SPECT correlates well with prognosis and its correlation is greater than that between coronary angiography and prognosis. As Tanaka et al quote, "ischemia-guided coronary revascularization as assessed with thallium-201 SPECT results in better prognosis than non-ischemia-guided revascularization, even in those with a high SYNTAX score." Therefore, SPECT-guided revascularization is feasible for high SYNTAX score patients. Although underestimation of ischemia by SPECT may sometimes occur, because of the nature of its relative evaluation especially in severe multivessel disease, functional indices, such as ejection fraction, volume, and segmental asynergy at stress, may indicate ischemic stunning, thereby identifying high-risk patients with an unremarkable perfusion study. The Figure is my suggestion for a comprehensive decision tree of diagnosis and/or treatment for suspected or known CAD. The combination of SPECT and the SYNTAX score has a synergistic effect in selecting which lesion gains benefit from PCI and assesses how much risk exists for PCI. For diagnosis and/or therapeutic decision making, supplemental use of SPECT (or FFR) and the SYNTAX score is recommended.

Disclosures

None to declare.

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