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Editorial

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Influence of Changes in Pretest-probability for Chronic Coronary Syndromes on Diagnostic Performance of Dobutamine Stress Echocardiography

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▸ See the article "Implications of Alterations in Pre-test Probability in the 2019 Update of ESC Guidelines for Chronic Coronary Syndromes on Diagnostic Accuracy of Pharmacological Stress-Echocardiography: A Retrospective Cohort Study" in volume 29 on page 160.

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Guidelines for chronic coronary syndromes recommend the assessment of pre-test probability (PTP) of coronary artery disease (CAD) in patients presenting with stable chest pain.[1-3] Previous guidelines recommended the use of the original or updated version of the Diamond and Forrester model, which is a simple predictive model based on age, sex, and the nature of symptoms, to estimate the PTP.[1)2)4)] However, the models used in previous guidelines tend to overestimate the PTP of CAD.[5)6)]

The recent 2019 European Society of Cardiology (ESC) guidelines for the diagnosis and management of chronic coronary syndromes suggest a new PTP model based on several contemporary studies[5)6)] and a pooled analysis,[7)] which may lessen the overestimation of the PTP and reduce the need for diagnostic tests in patients with suspected CAD.

Several non-invasive diagnostic tests establish the diagnosis and evaluate the risk of CAD, including anatomical imaging (coronary computed tomography [CT] angiography) and functional imaging modalities (stress cardiac magnetic resonance, stress echocardiography, single-photon emission CT, positron emission tomography, etc.). Among these, dobutamine stress echocardiography (DSE), which detects myocardial ischemia through assessing wall motion abnormalities during pharmacologic stress, has considerable sensitivity and specificity, and is widely accessible with a comparable low cost.[8)9)]

The performance of diagnosing imaging studies depends on the prevalence of disease in the population studied. Overestimation of PTP is an important contributing factor to the low diagnostic yield of non-invasive and invasive testing.[3)] The diagnostic performance of DSE may also be subject to the difference of estimated PTP in a study population.

In this issue of *Journal of Cardiovascular Imaging*, Dykun et al.[10)] evaluated the implications of alterations in PTP in the 2019 update of the ESC guidelines for chronic coronary syndrome on the diagnostic performance of DSE. In this single tertiary care center study, 206 consecutive patients undergoing DSE for suspected CAD were retrospectively included, and the

diagnostic performance of DSE for detecting obstructive CAD and revascularization therapy were assessed.

Although the new set of the PTP model in the 2019 ESC guidelines includes dyspnea as a presenting symptom, it tended to re-classify a substantial number of patients as having a PTP < 15% compared with the previous PTP model in the 2013 ESC guidelines for chronic coronary syndrome. Specifically, 9.2% of patients with a PTP < 15% according to the previous PTP model had a PTP > 15% according to the 2019 ESC guidelines, predominantly due to the inclusion of dyspnea. In contrast, 13.6% of patients with a PTP ≥ 15% according to the previous PTP model fell into a PTP < 15% as assessed by new PTP model.

Given the limitations that the decision to perform invasive coronary angiography (CAG) was made by the referring physician and that the proportion of patients undergoing CAG was relatively small, the diagnostic performance of DSE for the subset of patients with intermediate risk (PTP of 15%–85% according to the previous 2013 ESC guidelines and PTP > 15% for the new 2019 ESC guidelines), where non-invasive tests have greater benefit, was evaluated. While a relatively different subset of patients was included following the new PTP in the 2019 ESC guidelines, the authors concluded that the overall diagnostic performance of DSE was not relatively altered and can be performed with identical accuracy.

A prospective study that includes a large number of patients with invasive CAG may be mandatory to provide additional information in this field.

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