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Fractional flow reserve and visual assessment for moderate coronary artery stenosis

Cząstkowa rezerwa przepływu i ocena wizualna umiarkowanego zwężenia tętnicy wieńcowej

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We read with great interest the article written by Duran Karaduman et al., titled "Comparison between fractional flow reserve and visual assessment for moderate coronary artery stenosis", published in a recent issue of Kardiologia Polska [1]. The authors can be congratulated for their results, succeeding in demonstrating that in angiographically moderate coronary artery lesions, functional assessment using fractional flow reserve (FFR) is superior to visual estimation of stenosis severity.

The recent FFR-based trials indicate the superiority of physiological assessment over the anatomical one for guiding the therapy of coronary artery stenosis, and this study brings new and relevant insights into the field of functional assessment of coronary lesions [2]. However, despite the relevant value of the observations reported, we believe that the findings of the study raise several questions that are not entirely addressed in the manuscript.

First, as the study included only patients who were diagnosed with moderate coronary artery lesions by visual assessment; a clear definition of the so-called "moderate coronary artery lesion" should have been provided. In our opinion, presentation of the criteria used for classifying a lesion as moderate could help to better understand the relation between lesion severity and its functional significance.

Second, an interesting finding of this study was that only 37.9% of moderate lesions were haemodynamically significant when assessed by FFR, while 62.1% were not significant. This shows that in the majority of cases, a lesion that appeared moderate on visual assessment did not require interventional treatment because it was not functionally significant. At the same time, a significant number of patients had two-vessel or three-vessel disease (32.5% and 23.9%, respectively), which could influence the FFR results and the therapeutic decision. The FAME trial proved the long-term safety of FFR-guided interventions in patients with multivessel disease, leading to a significant decrease in major adverse cardiac event (MACE) rates two years after the index procedure in parallel with a reduction in the number of stents used in the FFR-guided group [2, 3]. At the same time, it has been demonstrated that the use of FFR can lead to reclassification of revascularisation strategy without compromising the MACE rates. A French registry confirmed that FFR led to treatment reclassification in 43% of patients, with similar MACE rates at one year in 464 reclassified patients as in 611 non-reclassified ones (MACE, 11.2% vs. 11.9%, log-rank $p = 0.78$) [4]. Therefore, in our opinion, in the study of Duran Karaduman et al. [1] it would be interesting to present and discuss the influence of FFR in guiding the therapeutic decision in patients with multivessel disease presenting one or more moderate coronary lesions, and to show if use of FFR in moderate lesions led to any change in the revascularisation strategy or to any reclassification of lesion severity in these cases.

Another issue that was only partially addressed in the manuscript, in our opinion, refers to the location of the lesions. The index coronary artery was the left anterior descending artery (LAD) in 68.7% of the cases. It would be interesting to discuss why the LAD lesions were more frequently subject to FFR examination than other locations. Were the LAD lesions of moderate severity on visual assessment to a greater extent than other locations, or was the visual assessment of LAD lesions simply different from the assessment of other coronary arteries, due to anatomical consideration and incidence plans used during angiography?

We believe that addressing the issues underlined above could further elucidate the role of invasive techniques for functional assessment in moderate coronary lesions and would add significant value to this interesting study.

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