International Journal of Cardiology 278 (2019) 34–35

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Editorial

Usefulness of coronary CT angiography for risk-adapted alignment of preventive health care

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ARTICLE INFO

Article history:
Received 24 October 2018
Received in revised form 6 December 2018
Accepted 11 December 2018
Available online 14 December 2018

During the last decade, coronary computed tomography angiography (CCTA) has emerged as a promising diagnostic tool for the work-up of patients with suspected coronary artery disease (CAD). Owing to continuous technical advancements and several large-scale randomized clinical trials demonstrating its high diagnostic accuracy and prognostic value [1,2], CCTA has experienced an upgrading in several CAD guidelines. The 2013 European Society of Cardiology (ESC) guidelines on stable CAD consider CCTA a class IIa recommendation for patients with low to intermediate (i.e. 15–50%) pretest probability. Moreover, the United Kingdom National Institute for Health and Care Excellence (NICE) guideline update from 2016 recommends CCTA as the first-line test for patients with suspected CAD [3,4]. The recently published 2-year follow-up of the Prospective Multicenter Imaging Study for Evaluation of Chest Pain (PROMISE) trial reported that approximately two-thirds of the myocardial infarctions occurred in patients with non-obstructive CAD on initial CCTA [5]. Hence, optimal cardiovascular risk factor control as recommended by the guidelines is decisive in these patients. Although cardiovascular prevention has been demonstrated to be effective, its implementation in everyday clinical practice remains challenging [6]. As a consequence, a substantial proportion of patients do not achieve the recommended risk factor targets. In contrast to functional non-invasive testing in patients with chest pain in search of myocardial ischemia (e.g. stress echocardiography/SPECT/PET/MRI), CCTA provides an anatomical visualization of the coronary arteries. Thus, in addition to its high sensitivity for detecting coronary stenoses, CCTA has the ability to discriminate between non-obstructive CAD and normal coronary arteries without evidence of coronary plaque. Hence, CCTA enables identification of patients who do not need coronary revascularization, but are at very high risk for future cardiovascular events.

In most health care systems, initiation and maintenance of preventive care measures is primarily provided in the outpatient sector by general practitioners (GP). Considering the increasing use of CCTA, it is important to know if the finding of non-obstructive CAD translates into improvements in preventive care. A recently published retrospective cohort study addressed this question, however, solely focusing on the number of prescriptions of aspirin and statins. This study reported an increase in the use of statins in patients with a diagnosis of non-obstructive CAD compared to patients with no CAD [7]. In this issue of the journal, a study by Mols et al. [8] provides more comprehensive insights into the changes of preventive care after CCTA in a large cohort including more than 3000 patients from Denmark. The authors did not only assess medication prescriptions, but also changes in health service utilization and among others serum cholesterol concentrations in a self-controlled case series design. They found that the diagnosis of non-obstructive CAD on CCTA led to an intensification of preventive care measures such as a higher prescription rate of lipid-lowering and antihypertensive medication as well as more frequent GP and cardiology consultations. Subsequently, follow-up laboratory results confirmed a greater decrease of cholesterol concentrations in patients with non-obstructive CAD compared to patients with no CAD. Interestingly, GP visits dropped after a normal CCTA compared to the time before the CT scan. This finding is somewhat surprising as patients with chest pain and unobstructed coronary arteries frequently suffer from coronary vasomotor disorders such as epicardial spasm or coronary microvascular dysfunction [9]. The latter is often the cause for ongoing or recurrent symptoms. Moreover, it has been shown that such patients have a high utilization of health care resources including frequent GP visits [10]. It may well be that a proportion of patients in the present study had non-cardiac symptoms and CCTA was thus able to rule out a cardiac cause. However, only 5.5% of the patients in the present study were classified as non-cardiac chest pain but 54.1% had atypical angina and 25.7% typical angina.

Moreover, medication prescriptions and GP consultations are only indirect indicators for prevention. The authors did not investigate if intensified prevention eventually resulted in a better clinical outcome of the patients. Moreover, it is alarming, that more than one-third of the patients with non-obstructive CAD found on CCTA had no follow-up and no medical preventive therapy 12 months after the CCTA scan. In

DOI of original article: https://doi.org/10.1016/j.ijcard.2018.09.094.
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https://doi.org/10.1016/j.ijcard.2018.12.034

order to maximize cost-effectiveness of CCTA on a population level, better implementation of downstream preventive measures in patients with non-obstructive CAD are crucial. The study by Mols et al. [8] adds valuable information about the change of medical preventive care and health care utilization after CCTA revealed non-obstructive CAD or no CAD. Finally, the analysis demonstrates a risk-adapted alignment of health care resources according to CCTA-derived risk-stratification in a real-world cohort.

Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

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