Acta Cardiologica

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/tacd20

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To cite this article: Patrizio Lancellotti (2024) Acute and chronic coronary artery disease, Acta Cardiologica, 79:2, 105-108, DOI: 10.1080/00015385.2024.2339011

To link to this article: https://doi.org/10.1080/00015385.2024.2339011

Published online: 16 Apr 2024.

ACTA CARDIOLOGICA
2024, VOL. 79, NO. 2, 105–108
https://doi.org/10.1080/00015385.2024.2339011

Taylor & Francis
Taylor & Francis Group

EDITORIAL

Acute and chronic coronary artery disease

This issue of Acta Cardiologica is devoted to acute and chronic coronary artery disease (CAD). Acute CAD, which includes acute coronary syndrome (ACS) and sudden cardiac death (SCD), manifests with a sudden reduction or cessation of blood flow due to thrombus formation on ruptured plaques [1,2]. Management of acute CAD involves rapid risk assessment, reperfusion therapy, and initiation of antiplatelet medications [3–5]. Chronic CAD, characterised by stable angina and silent ischaemia, results from progressive atherosclerotic plaque development. Treatment of chronic CAD focuses on symptom relief, risk factor modification, and prevention of disease progression. Lifestyle interventions, pharmacotherapy, and revascularization procedures may be employed to manage chronic CAD effectively [6–9]. Both acute and chronic CAD require comprehensive management strategies to improve patient outcomes and reduce the risk of adverse cardiovascular events. Timely intervention in acute CAD can minimise myocardial damage and prevent complications such as myocardial infarction [10]. In contrast, chronic CAD management aims to alleviate symptoms, improve quality of life, and prevent recurrent ischaemic events [11,12]. Overall, a multifaceted approach involving medical therapy, lifestyle modifications, and invasive procedures is essential for optimising outcomes in patients with CAD.

Genome-wide association studies identify *Sort1* gene associated with risk of CAD. Sortilin protein enhances LDL absorption, form cell development, and atherosclerosis in macrophages. Atak et al. conducted a study examining the relationship between *Sort1* gene expression and lipid levels, lipoprotein subfractions, and inflammation in CAD. Their research involved 162 CAD patients and 49 healthy individuals. The findings revealed a significant association between elevated *Sort1* gene expression and both atherogenic low-density lipoprotein (LDL) phenotype and inflammation. This suggests that increased Sort1 gene expression may play a role in the development of CAD. The study highlights the potential importance of Sort1 gene expression as a biomarker for CAD risk assessment [13].

Numerous clinical trials have demonstrated that the diagnostic accuracy of coronary computed tomography angiography (CCTA) can be improved with the use of FFR_{CT}, primarily due to its superior specificity when compared to CCTA alone. Choustoulakis et al. conducted a study to evaluate the cost-effectiveness of FFRct in low to intermediate risk patients presenting to the emergency department with acute chest pain. The findings revealed that integrating FFRct into the diagnostic process when CCTA results were inconclusive proved to be cost-effective, potentially resulting in a savings of 198€per patient (Figure 1) [14].

The diagnostic potential of circRNA (Circ)0051386 in acute ST-segment elevation myocardial infarction (STEMI) and its prognostic significance in predicting major adverse cardiovascular events (MACE) have not been fully elucidated. In this study, involving 166 patients with

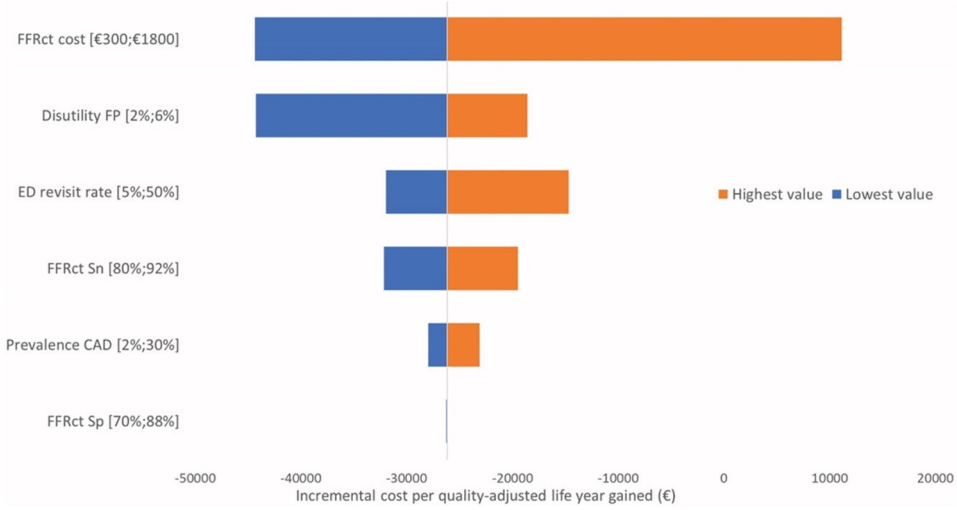

Figure 1. Tornado diagram showing the variables in descending order of impact on the incremental cost-effectiveness ratio for the conditional-FFRct pathway. The *x*-axis represents the ICER and is centred on the base-case value of €–26,196€/QALY. The *y*-axis represents the tested variables together with the highest and lowest values considered. FFRct: CT-based fractional flow reserve; FP: false positive; ED: emergency department; Sn: sensitivity; Sp: specificity (From reference [14]).

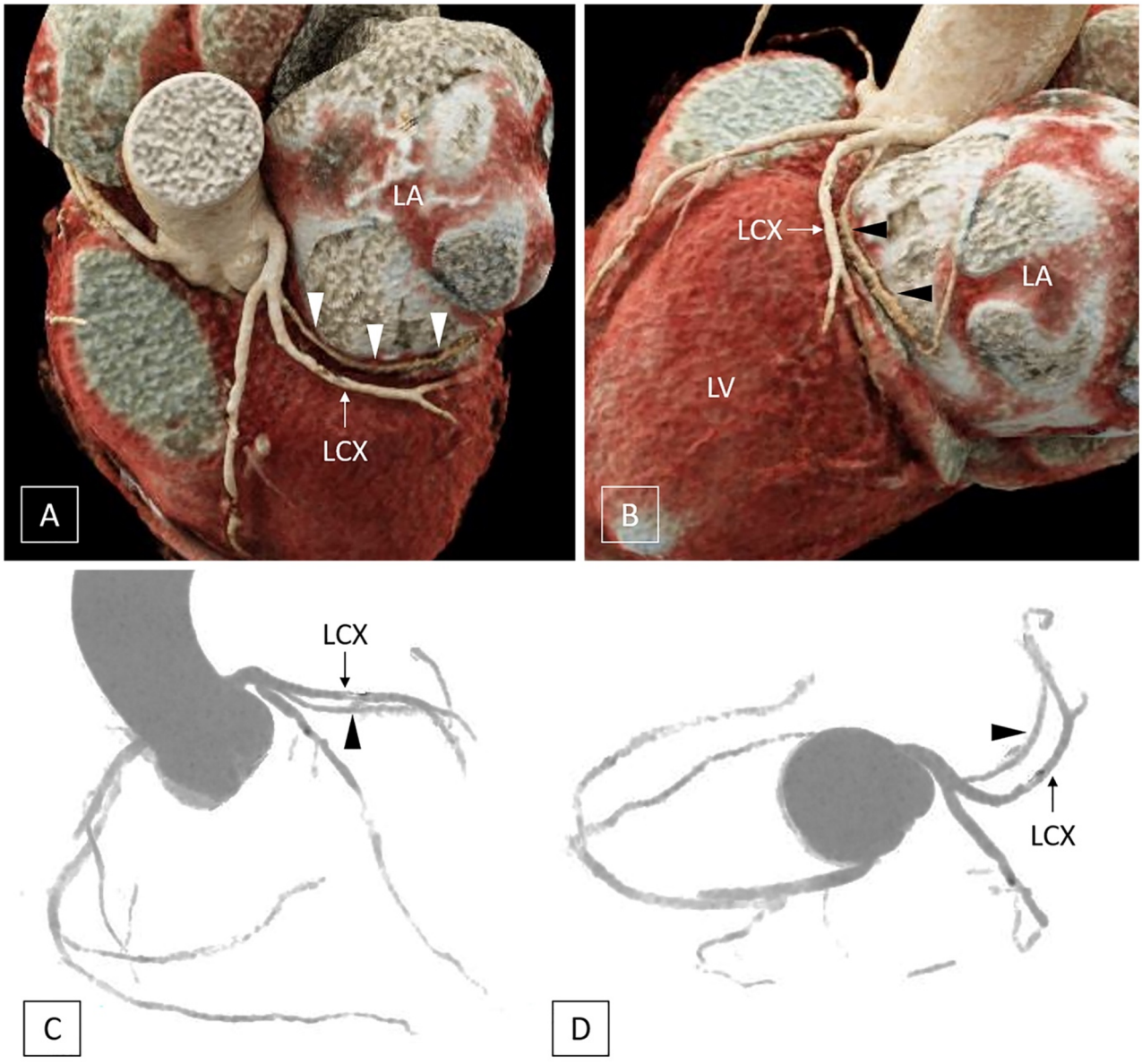

Figure 2. Volume rendered images (A and B) and virtual angiography images (C and D) reveal the anomalous course of the left atrial circumflex artery (arrowheads) arising from the left circumflex (LCx) artery mimicking a 'dual' left circumflex artery. LA: left atrium; LV: left ventricle (From reference [25]).

STEMI and 83 healthy donors, it was found that Circ_0051386 serves as a promising biomarker for diagnosing STEMI and as a predictor of MACEs in STEMI patients following percutaneous coronary angioplasty (PCI) [15]. Furthermore, its possible role in STEMI pathogenesis may involve the regulation of inflammation in vascular endothelial cells.

Lipid-rich plaques containing a thin fibrous cap (FC) are commonly associated with the pathogenesis of ACS. Optical coherence tomography (OCT) allows for accurate identification and measurement of FC, whereas near-infrared spectroscopy (NIRS) is validated for lipid detection in coronary arteries. OCT parameters such as FC volume and total lipid arcs exhibit a robust correlation with maximal lipid core burden index. Additionally, there is a significant correlation between OCT-derived features and NIRS findings. Therefore, comprehensive OCT analysis can reliably detect the presence of coronary lipids [16].

The prevalence of long diffuse CAD is on the rise due to increasing prevalence of multiple risk factors and population ageing. In the present study, the authors aimed to investigate the clinical and angiographic (guided by IVUS) differences between the use of a single long stent versus multiple overlapping stents in patients with very long coronary lesions (≥40 mm) who presented with CCS. They enrolled 550 patients with CCS, with 320 undergoing treatments with a single long stent (≥40 mm) and 230 receiving two or more overlapping stents. Angiographic follow-up, guided by IVUS, was performed in only 50 patients at 6 months post-PCI [17]. Their findings suggest

that both long single stents and overlapping stents are viable therapeutic options for patients with long CAD. Importantly, there was no significant difference between the two strategies in terms of angiographic follow-up guided by IVUS after 6 months. Therefore, clinicians can consider either approach based on individual patient characteristics and lesion morphology.

In their study involving 69 patients, Talakoob et al. demonstrated a potential association between the use of a larger pre-dilation diameter balloon and a higher 1-year MACE rate in patients undergoing PCI on saphenous vein grafts with a prior history of coronary artery bypass grafting (CABG) [18].

This retrospective cohort study investigated the impact of including oral nitrates in discharge medications on MACE among CAD patients. Analysing 2979 CAD patients from May 2013 to October 2015, grouped by whether oral nitrates were included post-coronary angiography, results showed no significant association between oral nitrates and MACE after adjusting for covariates like SYNTAX score. However, combining oral nitrates with hypertension or low uric acid levels increased MACE occurrence, suggesting close monitoring for adverse events in these cases [19].

The influence of anaemia on the long-term prognosis of patients with non-ST-elevation myocardial infarction (NSTEMI) remains poorly understood due to limited data. This study aimed to address this gap by investigating 482 NSTEMI patients who underwent PCI. Over a median follow-up period of 31 months, 124 (25.7%) MACE were observed. The authors' analysis identified several independent risk factors significantly impacting survival time, including sex, age, smoking history, diabetes, creatinine levels, erythrocyte count, and haemoglobin levels. Notably, low haemoglobin levels emerged as an independent factor influencing the survival duration of NSTEMI patients [20].

Early cardiac rehabilitation exercise is essential for patients with CAD following PCI. In this study involving 1231 patients, exercise post-PCI was found to improve left ventricular ejection fraction (LVEF), enhance the distance covered in the 6-min walk test (6MWD), lower heart rate (HR), and reduce the risk of angina, arrhythmia, and coronary artery restenosis [21].

Left atrial (LA) strain, a novel indicator of LA function, serves as a reliable predictor of diastolic dysfunction. While SGLT2 inhibitors have demonstrated improvements in heart failure outcomes, there is scarce data available regarding their utilisation immediately following ACS and their influence on LA strain. In a study comprising 44 patients, the addition of empagliflozin to standard ACS therapy prior to discharge among patients with ACS and type 2 diabetes was associated with enhanced LA function [22].

In this issue of Acta Cardiologica, alongside the original article mentioned, several focus images and cases illustrating intriguing clinical conditions have also been featured (Figure 2) [22–34].

Disclosure statement

No potential conflict of interest was reported by the authors.

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