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EDITORIAL COMMENT

Percutaneous coronary intervention in chronic total occlusions: Should it be avoided in type 2 diabetic patients?

Intervenção coronária percutânea em oclusões crónicas totais: deverá ser evitada nos doentes com diabetes tipo 2?

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Diabetes is a highly complex and heterogeneous disease. Chronic hyperglycemia and progressive insulin resistance lead to various levels of endothelial dysfunction, oxidative stress, thrombus formation, impaired fibrinolysis and a chronic inflammatory state that raises levels of circulatory cytokines such as intercellular adhesion molecule-1 (ICAM-1), vascular adhesion molecule-1 (VCAM-1) and interleukin-6.[1,2] The presence of diabetes thus leads to increasing vascular calcification and promotes the transformation of stable plaques into unstable ones, with a consequent increase in acute coronary syndromes.[3] Diabetes raises the risk of coronary artery disease (CAD) 2–4 fold, and it is common knowledge that approximately 80% of diabetic patients die from cardiovascular disease, mostly ischemic events, as they are prone to accelerated atherosclerosis and atherothrombosis, which begins at an early stage of the condition.[4]

Diabetic patients more often present with diffuse and extensive CAD, heavily calcified arteries, reduced vessel diameter and multivessel involvement. Additionally, their clinical presentation may mean that their clinical assessment and diagnosis are more challenging, as these patients tend to present with non-typical symptoms or even silent myocardial ischemia.[5] Chronic total occlusions (CTOs), which are present in approximately 40% of patients with diabetes, are usually highly complex lesions with lower procedural success rates and with higher risk of procedural adverse events. The evidence supporting percutaneous coronary intervention (PCI) in this subset of patients is controversial. One study analyzed 2015 patients and reported a lower rate of major adverse cardiovascular events (MACE) in diabetic patients successfully treated with CTO-PCI versus medical treatment, but the same benefit was not observed in the non-diabetic group.[6] In another study, prospectively assessing the five-year cardiovascular survival of successful CTO-PCI in patients with or without diabetes, non-diabetic patients had better long-term survival, with fewer MACE than those without diabetes.[7] A recent meta-analysis that included two randomized controlled trials and 14 observational studies concluded that, after CTO-PCI, non-diabetic patients had lower all-cause mortality and MACE than patients with diabetes.[8]

In this context, Costa et al.[9] conducted an interesting retrospective study in 177 patients undergoing CTO-PCI in which they analyzed symptom recurrence (primary outcome) and

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myocardial infarction/all-cause mortality (secondary outcomes) in a two-year follow-up in diabetic and non-diabetic patients. After revascularization, the overall group, which had mildly depressed left ventricular ejection fraction (LVEF) at baseline, improved to preserved LVEF at follow-up. The primary outcome occurred in a small number of patients and was similar between groups, although angina recurrence was significantly more frequent in diabetic patients, who consequently were found to have more significant atherosclerotic disease progression than non-diabetics but, curiously, similar rates of stent restenosis. No differences were found regarding the composite secondary endpoint, regardless of the lower creatinine clearance in diabetic patients and the fact that it was identified as an independent predictor of all-cause mortality. In conclusion, after successful CTO recanalization, the presence of diabetes was not associated with significant long-term clinical repercussions, and further studies are needed to confirm the benefits of CTO-PCI in this group.

Conflicts of interest

The author has no conflicts of interest to declare.

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