

Holistic management of patients with coronary artery disease undergoing coronary revascularization

Manejo integral de los pacientes con enfermedad coronaria sometidos a revascularización coronaria

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INTRODUCTION

Coronary artery disease (CAD) remains the single most important cause of morbidity and mortality globally. In the recent decades, mechanical revascularization of coronary stenoses with coronary artery bypass grafting (CABG) or percutaneous coronary intervention (PCI) has revolutionised the treatment of CAD. CABG has remained the predominant mode of revascularization during the 2nd half of 20th century. PCI has become the preferred method of revascularization in patients with single or double vessel disease, not involving left main stem. However, with the growing emphasis on mechanical revascularization, there is a concern that physicians and patients may become complacent about other aspects of managing CAD. This editorial highlights the two important aspects of managing CAD, optimal medical therapy (OMT) and life style modification, which are complimentary to coronary revascularization.

OPTIMAL MEDICAL THERAPY

OMT as 1st line therapy for CAD

MASS-II trial (n=611) has shown no difference in

survival between OMT and revascularization (OMT 69%, CABG 74.9%, PCI 75.1%; p=0.09) at 10-year follow-up, despite difference in rates of myocardial infarction (MI) and repeat revascularization; however, the trial was underpowered for clinical outcomes¹. COURAGE trial (n=2287) has shown that patients with significant one-, two- and three-vessel CAD without left main stem involvement randomised to OMT alone or to OMT plus PCI have no significant difference in the composite endpoint of death or non-fatal MI at 4.6 years follow-up². Both groups were also equal in-terms of freedom from angina at 5-years². Other studies comparing OMT with PCI have also reported no mortality benefit, increased nonfatal periprocedural MI, and reduced need for urgent revascularization with PCI compared with OMT³. CABG confers a survival benefit in patients with unprotected left main stem or three-vessel CAD, particularly in those with severe symptoms, early positive exercise tests, and/or impaired left ventricular function⁴. However, CABG with OMT did not show any mortality advantage over OMT in STITCH trial⁵. Therefore, OMT is the recommended initial choice in stable CAD patients without significant disease in left main stem or proximal left anterior descending artery⁶.

OMT for all patients undergoing revascularization

OMT is important and complimentary to revascularization therapy, whether it is PCI² or CABG⁷. Progression of atherosclerosis continues after revascularization and is associated with deterioration of left ventricular function. Appropriate use of the secondary prevention therapy reduces mortality and MI after revascularization⁸. The use of OMT for secondary prevention, however, remains sub-optimal even in pa-

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tients with established CAD who had undergone coronary revascularization, particularly after CABG⁹⁻¹². In the EuroHeart Survey, a sizeable proportion of patients with chronic stable angina, managed medically or invasively, were not on OMT and this was associated with poor outcomes¹³.

A recently published post-hoc analysis of the SYNTAX trial¹⁴ has shown that prescription of OMT (defined as the combination of at least one antiplatelet drug, statin, beta-blocker and angiotensin converting enzyme inhibitor/angiotensin receptor blocker) was only 41% at the time of discharge after revascularization (PCI or CABG) and at 5-year only one-third patients in both treatment groups were taking OMT (PCI 40% and CABG 36%). OMT use was associated with a significant reduction in mortality and composite endpoint of death/MI/stroke. The study suggested that all the components of OMT are important for reducing adverse outcomes irrespective of revascularization strategy. OMT should therefore be considered for all patients with complex CAD treated with medical therapy, PCI or CABG, unless contraindicated.

Duration of dual antiplatelet therapy

Unless contraindicated, all patients undergoing PCI and stenting should receive dual antiplatelet therapy (DAPT) to reduce risk of stent thrombosis. For patients undergoing PCI for ACS, DAPT is recommended for 12 months. However, the duration and choice of anti-platelet agents for patients undergoing PCI for stable angina remains debatable and may depend on the choice of stent (BMS or DES). It is generally recommended to have a minimum of 1-month DAPT with BMS and 6-month DAPT with DES. However, 3-month DAPT with newer generation DES has also been approved in Europe¹⁵. Mauri et al. have reported reduction in MI and stent thrombosis with continuation of DAPT beyond 12-months, albeit at the expense of increased moderate-severe bleeding¹⁶. There was no difference in cardiovascular mortality; however, all-cause mortality was higher with continued DAPT. However, results of DAPT trial cannot be generalized. ARCTIC-Interruption, REAL-LATE, ZEST-LATE and PRODIGY have shown no benefit of continuing DAPT beyond 1-year^{17,18}. Conversely, SECURITY, OPTIMIZE, EXCELLENT, RESET and ISAR-SAFE have shown that 3-6 months DAPT is non-inferior to 12-months DAPT^{19,20}. An individualized risk-benefit assessment based on ischemic/thrombotic versus bleeding risk should guide the duration of DAPT, though defining these risks remains challenging. Patients with simple coronary lesion completely revascularized with a newer generation stent and no further events during the next 12-months is unlikely to require DAPT beyond 12-months.

Monitoring compliance and therapeutic effect

Patients with cardiovascular disease are likely to be on multiple drugs with the potential side effects and drug interactions. It is important to address any issues that a patient may have and stress the importance/rationality of each drug to improve patient adherence. The importance of OMT should be emphasised to patients at each clinical encounter to improve compliance. Moreover, hospital- and community-based programmes, such as the Get With The Guidelines and the Guidelines Applied in Practice initiative, may help to improve OMT prescription and patients' compliance²¹.

Furthermore, it is also important to monitor the desired therapeutic effect of the medication. Farkouh et al. analysed data from diabetic patients in COURAGE, BARI-2D and FREEDOM and found that only 8% FREEDOM, 18% COURAGE and 23% BARI-2D patients achieved target for controlling blood pressure, cholesterol, diabetes and smoking cessation²². In CLARIFY registry²³ (n=33177), nearly 41% of patients on beta-blockers had heart rate above 70bpm. In another recent study of 366 patients with acute myocardial infarction, one-third of patients had LDL cholesterol levels above 2.5 mmol/L at 6-month follow-up²⁴. Therefore, it is important to periodically monitor heart rate, blood pressure, lipid profile and HbA1c to optimise the secondary prevention therapy.

LIFE STYLE MODIFICATIONS

Smoking

The deleterious effects of smoking after PCI or CABG have been well described²⁵⁻²⁷, although some studies also suggested a "smokers' paradox"²⁸. However, the smoking status in most of these studies is usually taken at baseline and not collected at regular intervals. Conversely, smokers with established coronary artery disease may stop smoking permanently or intermittently. Therefore, assessing the impact of smoking status at baseline for long-term outcomes is not reliable. Additionally, most studies were performed in the era of PCI without stents or with bare metal stents and therefore provide little insight into the impact of smoking in patients undergoing revascularization with drug-eluting stents.

In a recent post-hoc analysis of the SYNTAX trial, it was shown that 20% of patients with complex CAD were smoking at baseline population²⁹. 18% patients had change in smoking habits during 5-year follow-up. The time of revascularization appears to be the most effective period to offer smoking cessation advice as suggested by 50% reduction of smoking habit between baseline and 6 months. Baseline smoking was associated with worse clinical outcomes due to a higher incidence of recurrent MI in both PCI and CABG arms but was not associated with MACCE. Interestingly, smoking status as time-dependant variable was an independent predictor of the composite endpoint of dea-

th/MI/stroke (hazard ratio [HR]: 1.8; 95% confidence interval [CI]: 1.3 to 2.5; $p=0.001$) and MACCE (HR: 1.4; 95% CI: 1.1 to 1.7; $p=0.0002$). This study confirms that there is no “smokers’ paradox”, at least in the context of patients with complex coronary artery disease undergoing coronary revascularization. Abstinence from smoking improves the outcomes achieved with coronary revascularization and all patients undergoing PCI or CABG should be encouraged to stop smoking indefinitely.

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Other life style modifications

Early intervention should be targeted at eradicating poor-health behaviours by offering appropriate counselling that aids to adopt lifestyle changes, that diminish risk of cardiac adverse event, such as promoting weight loss, providing support to increase physical activity and adopting a healthy diet. However, limited data suggest that there is room for improvement in patient education about these life style changes³⁰.

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