EDITORIAL

Percutaneous Coronary Intervention in the Left Main Coronary Artery

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Since the beginning of the 90s, percutaneous transluminal coronary angioplasty (PTCA) with stent implant has gradually displaced coronary artery by-pass graft surgery (CABGS) as the treatment of choice for the revascularization of patients with ischemic heart disease with compromise of one, two and even three coronary vessels. Nevertheless, significant obstructions (= 50%) of the left main coronary artery (LMCA) have been treated with surgery for more than thirty years, when the results of the European and Veterans Administration randomized trials demonstrated that coronary artery by-pass graft surgery was better than medical treatment. These outcomes were confirmed at the beginning of the 80s by the Coronary Artery Surgery Study (CASS) register. (1-3)

In spite of the advances of coronary angioplasty, the routinely use of this procedure in patients with lesion of the left main coronary artery has not been adopted for the following reasons: 1) the threat of a thrombotic occlusion of a stent placed in the left main coronary artery, and its catastrophic consequences, and, 2) the necessity of performing coronary angiography during follow-up to detect a possible early restenosis and subsequent reintervention which is very frequent in this group of patients. Nevertheless, percutaneous coronary interventions in the left main coronary artery is a valid option in certain specific cases, such as patients with a "protected left main coronary artery" (patent arterial or venous grafts to the left anterior descending or circumflex coronary artery) or patients with high risk at surgery not considered candidates for revascularization surgery. As angioplasty of the left main coronary artery has a high success rate with a relatively low risk in these patients, it has been suggested that this procedure is a valid option in the unprotected left main coronary artery in patients with an acceptable risk or with low risk at surgery.

In the current issue of the *Revista,* Leguizamón et al present a registry of percutaneous coronary intervention with placement of a conventional stent in the unprotected LMCA in a group of 32 patients with high risk at surgery. The authors report an adequate angiographic success, in-hospital mortality of 3.1% and late mortality of 19%. (4) In this group of high-risk patients, mortality rate is lower than predicted operative mortality based on a risk score, and it is comparable to international registries. Based on this report and on others which included greater number of patients, it seems reasonable to conclude that angioplasty in the unprotected left main coronary artery is a valid therapeutic option in patients with high risk at surgery. (5, 6) This conclusion does not release the attending physician from the responsibility of performing a careful assessment of patient's global risk; in addition, the real benefit of the procedure, beyond its technical feasibility and its low risk, should be evaluated in each individual patient before prescribing such an invasive treatment. This is particularly important in certain patients with high risk at surgery with comorbidities severe enough to affect not only the risk of coronary artery by-pass graft surgery but also the survival and the quality of life, independently of the presence of a significant obstruction in the left main coronary artery. Thus, the attending physician should compare the risk of angioplasty of the left main coronary artery with the operative risk (the objective of the present paper) and with the risk of not performing an invasive procedure in patients with severe comorbidities. It should also be taken into account that the lesion of the left main coronary artery is frequently associated with diffuse coronary artery disease. (7) Therefore, several patients who have undergone a successful percutaneous coronary intervention of the left main coronary artery are still at risk of ischemia and plaque rupture in other coronary artery. In this group of patients angioplasty should serve as a bridge towards a medical strategy that extends their quality of life or allows the implementation of a definite curative treatment. Finally, it must be taken into account that patients with drug-eluting stents should receive dual antiplatelet therapy for at least one year. (8) Therefore, physicians should consider the need of discontinuing clopidogrel or aspirin in the presence of certain comorbidites, exposing the patient to the risk of stent thrombosis and sudden death.

As it has been previously mentioned, the feasibility and the low risk of angioplasty in patients with "protected" left main coronary artery and/or high risk at surgery has led to the possibility of extending this treatment as an alternative to coronary artery by-pass graft surgery in patients who do not necessarily fulfill these criteria. The first randomized and prospec-

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tive study comparing percutaneous coronary intervention with placement of a drug eluting stent versus CABGS in the unprotected left main coronary artery in patients with low risk at surgery has been published recently. A total of 105 patients were randomized and followed-up for a year. The rate of major coronary events seen at short-term was lower in patients who had undergone PCI with placement of drug eluting stents and comparable to long-term outcomes seen in patients submitted to CABGS. Patients treated with drug eluting stents also showed an improvement in left ventricular function, the primary end-point of this study, compared to CABGS (increase in ejection fraction: 3.3% ± 6.7% versus 0.5% ± 0.8%, p = 0.047). So far, no studies have been published with a statistical power large enough to detect any benefit in long-term mortality. (9) Therefore, percutaneous coronary intervention with placement of drug eluting stent in low risk patients should be considered in experimental phase. Even more, the proximal segment of the anterior descending artery is the portion with the greatest likelihood of developing coronary disease and the greatest number of coronary events. Coronary artery bypass grafting to the mid-left anterior descending artery segment provides a more complete revascularization compared to angioplasty of the left main coronary artery; in addition, this procedure presents a greater potential to reduce the number of events and it is associated with an extremely low mortality. (7) Additionally, the Optimal Medical Therapy with or without PCI for Stable Coronary Disease (COURAGE) trial has demonstrated that medical treatment has considerably improved, and drug eluting stents have drastically reduced the reintervention rate. (10) It would be expected that a modern strategy of new generation stents combined with aggressive medical therapy might equal or surpass the long term survival of the myocardial revascularization surgery in the treatment of left main coronary artery disease. However, this has not been demonstrated yet. Recently, a randomized, prospective, multicenter and large-scale study, the SYNTAX (SYNergy between percutaneous coronary intervention and TAXus and cardiac surgery) trial, has completed the randomization stage. This study might provide better evidence in this dilemma of CABGS versus PTCA with placement of drug eluting stents in the unprotected LMCA. (11)

Further studies with similar statistical power to detect an equal or lower long-term mortality rates with percutaneous coronary intervention in the unprotected left main coronary artery should be carried out. Until the results of the SYNTAX trial or of future studies become available, this procedure should only be considered an alternative in high-risk patients with contraindications to surgery that require an invasive approach based on the clinical presentation and global risk. The registry published in this issue of the *Revista* provides cardiologists with useful data of their environment, helping them with their decision-making even though the complete evidence is not available yet.

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