Reproducibility of the SYNTAX score in medical practice

HORACIO POMÉS IPARRAGUIRRE[MTSAC]

During the last years, several randomized and controlled studies have demonstrated that the use of drug-eluting stents (DES) produces a significant reduction in restenosis rate and need for new revascularization compared to conventional stents. Consequently, percutaneous coronary interventions (PCI) with implant of DES in patients with multivessel disease (MVD) and complex coronary lesions have become more common. (1) According to current guidelines coronary artery bypass graft surgery (CABGS) is still the treatment of choice for patients with extensive coronary artery disease, including left main coronary artery (LMCA) disease and MVD. (2)

The introduction of DES, together with the advances in adjuvant therapy during and after the procedure, has improved the outcome of PCI, so at present it represents a valid option instead of CABGS in this group of patients. (3) However, the international guidelines still recommend PCI in LMCA disease only for patients with high surgical risk or in emergencies, such as bailout procedures or acute myocardial infarction therapy, as recent studies have not demonstrated that PCI is superior or, at least, not inferior to CABGS in terms of need for new revascularization. (2)

Several indices have been developed to stratify high-risk patients with LMCA disease or MVD. The SYNTAX score (SS) (Synergy between Percutaneous Coronary Intervention with Taxus and Cardiac Surgery score) was postulated as a method for evaluating the complexity of coronary artery anatomy. (4) In the SYNTAX trial, the score has demonstrated a good discriminating prognostic ability for selecting patients eligible for CABGS or PCI. In addition, its reproducibility has indicated an acceptable level of accordance. (4, 5)

In the present issue of the Argentine Journal of Cardiology, Lamelas et al. (6) have analyzed the reproducibility and degree of agreement of the score between highly trained interventional cardiologists and residents in cardiology, representative of in-training physicians in clinical cardiology. The goal of the study was to evaluate whether residents in clinical cardiology could make an adequate evaluation of the SS and to detect possible biases in this evaluation.

Data from consecutive diagnostic coronary angiographies performed over a two year period in patients with left main coronary artery disease and/or three-vessel disease were retrospectively collected. None of the patients had history of previous revascularization. A resident in clinical cardiology (RC) in the second year of the residency program completed the tutorial and self evaluation available at the website www.syntaxscore.com.before starting to use the SS calculator. (7) The resident then calculated the total SS of the included angiographies by using the automated scoring algorithm available at the same website. These results were then compared with those calculated by an interventional cardiologist (IC) from the institution. The level of inter-observer agreement was evaluated using Cohen's kappa coefficient based on previously accepted agreement values (0.41-0.60 moderate, 0.61-0.80 good and 0.80- 0.99 optimal). The results were also analyzed and presented in graphs with the classic Bland-Altman plot method.

The results showed a good agreement between the SS evaluations of the experienced interventional cardiologist and the previously trained resident in cardiology, although the RC had a tendency to underestimate high scores calculated by the IC. These satisfactory results are consistent with other studies previously published in subgroups of patients with LMCA disease.

In this sense, Shiomi et al. (8) conducted a study to evaluate inter-observer and intra-observer variability in the estimation of the score of patients undergoing unprotected LMCA PCI. The score of 101 consecutive patients who underwent unprotected LMCA stenting was independently assessed by two experienced interventional cardiologists. One of the cardiologists evaluated all the cases again 6 months after the initial assessment. The degree of agreement was also measured by the kappa coefficient using the same discriminating values for qualitative assessment. In this study, inter-observer and intra-observer SS estimation variability evidenced a remarkably good degree of agreement, with kappa values of 0.62 and 0.78, respectively.

As the authors stated, the degree of agreement in the current analysis in "real world" clinical practice was consistent with previous results evaluating the score variability in patients enrolled in the SYNTAX trial. On the other hand, the retrospective nature of the analysis could have been one of the reasons

favorably influencing the results, on the premise that the patients had significant LMCA stenosis, although the observers were blinded to the procedural results and clinical outcome. (8)

Both studies have limitations that should be considered at the moment of estimating the clinical usefulness of applying the score in daily practice. Firstly, the analyses were performed retrospectively, as Shiomi et al. have recognized in their study. (8)

Secondly, the complexity of SS calculation, together with the apparent discrepancy in estimating higher scores expressing complex angiographic lesions, emphasizes the need for intensive training to use this tool in daily practice.

Finally, as Lamelas et al. (6) have correctly commented, the fact that the levels of qualitative accordance were outside the optimal range supports the need for considering the SS as a useful tool that is complementary to other clinical parameters for therapy decision-making in "real world" patients.

REFERENCES

1. Pomés Iparraguirre H. Selección del método de revascularización en pacientes con enfermedad del tronco y de múltiples vasos: la visión del cardiólogo clínico luego del SYNTAX. Rev Argent Cardiol 2009;77:455-7.

2. Kushner FG, Hand M, Smith SC Jr, King SB 3rd, Anderson JL, Antman EM, et al. 2009 focused updates: ACC/AHA guidelines for the management of patients with ST elevation myocardial infarction (updating the 2004 guideline and 2007 focused update) and ACC/AHA/SCAI guidelines on percutaneous coronary intervention (updating the 2005 guideline and 2007 focused update) a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2009;54:2205-41.

3. Kim YH, Park DW, Kim WJ, Lee JY, Yun SC, Kang SJ, et al. Validation of SYNTAX (Synergy between PCI with Taxus and Cardiac Surgery) score for prediction of outcomes after unprotected left main coronary revascularization. JACC Cardiovasc Interv 2010;3:612-3.

4. Serruys PW, Onuma Y, Garg S, Sarno G, Van den Brand M, Kappetein AP, et al. Assessment of the SYNTAX score in the Syntax study. EuroIntervention 2009;5:50-6.

5. Serruys PW, Morice MC, Kappetein AP, Colombo A, Holmes DR, Mack MJ, et al. Percutaneous coronary intervention versus coronary artery bypass grafting for severe coronary artery disease. N Engl J Med 2009;360:961-72.

6. LLamelas PM, Nau G, Costabel JP, Thierer J, Belardi J, Alves de Lima A. Evaluación del puntaje SYNTAX por residentes de cardiología clínica. Rev Argent Cardiol 2012;80:299-303. http://dx.doi.org/10.7775/rac.es.v80.i4.1327.

7. SYNTAX working-group. SYNTAX score calculator 2.02. Disponible en www.syntaxscore.com.

8. Shiomi H, Tamura T, Niki S, Tada T, Tazaki J, Toma M, et al. Inter- and intra-observer variability for assessment of the synergy between percutaneous coronary intervention with TAXUS and cardiac surgery (SYNTAX) score and association of the SYNTAX score with clinical outcome in patients undergoing unprotected left main stenting in the real world. Circ J 2011;75:1130-7.