SS–01

Independent Predictors of in-Stent Restenosis in Young Patients qith Acute Coronary Syndrome: The Role of the Naples Prognostic Score and Procedural Risk Factors

Ali Duygu, Fahri Er

Department of Cardiology, Bandırma Onyedi Eylül University Faculty of Medicine, Balıkesir, Türkiye

Introduction and Aim: In-stent restenosis (ISR) following percutaneous coronary intervention (PCI) in young (≤50 years) patients with acute coronary syndrome (ACS) remains a significant concern that adversely affects clinical outcomes. This study aimed to identify independent clinical, angiographic, and laboratory-based predictors of 1-year ISR development in a young ACS population, and to evaluate, for the first time in this population, the Naples Prognostic Score (NPS), a composite index reflecting nutritional and inflammatory status.

Methods: Patients aged ≤50 years who underwent PCI for ACS were retrospectively analyzed. ISR was defined as ≥50% luminal narrowing within the stent. The NPS was calculated based on four threshold criteria—serum albumin (<40 g/L), total cholesterol (<180 mg/dL), neutrophil-to-lymphocyte ratio (NLR, >2.96), and lymphocyte-to-monocyte ratio (LMR, <4.44)—yielding a score of 0–4, and patients were stratified into low- (0), intermediate- (1–2), and high-risk (3–4) groups. One-year ISR-free survival was assessed using the Kaplan-Meier method, with between-group comparisons performed by the log-rank test; independent predictors were determined using multivariable Cox regression analysis.

Results: After patients meeting the exclusion criteria were removed from the study, a total of 326 patients were analyzed, of whom 40 (12.3%) developed ISR. NPS was significantly higher in patients with restenosis (1.85±1.05 vs. 1.35±0.97; p=0.002), with a clear dose-response relationship observed across risk groups (ISR rates of 5.7%/11.8%/25.0% in the low-/intermediate-/high-risk groups, respectively; χ^2=9.46; p=0.009). Kaplan-Meier analysis demonstrated a significant difference in 12-month event-free survival according to NPS group (log-rank p=0.014). In the multivariable Cox regression model, multivessel involvement (HR=5.43; 95% CI 2.50–11.82; p<0.001), stent length (HR=1.08 per 1-mm increase; 95% CI 1.05–1.11; p<0.001), diabetes mellitus (DM) (HR=2.11; 95% CI 1.12–3.99; p=0.022), and NPS (HR=1.49; 95% CI 1.09–2.04; p=0.012) were identified as independent predictors. Hemoglobin, which was significant in univariable analysis (HR=0.85; p=0.039), lost its independent significance in the multivariable model (p=0.235).

Conclusion: Multivessel involvement and stent length emerged as the strongest procedural risk factors for ISR in young ACS patients, while DM was confirmed as a classic independent comorbid risk factor. The Naples Prognostic Score was shown, for the first time in this population, to be an independent and dose-dependent predictor of restenosis. This easily calculable, cost-free score derived from routine blood tests may contribute to clinical risk stratification and the determination of more intensive angiographic follow-up strategies in young ACS patients.

Keywords: Young patients, acute coronary syndrome, instent restenosis, Naples score.

SS–02

IVUS-guided DK-miniculotte Technique in a Short LMCA

Betül Sarıbıyık Çakmak,[1] Ahmet Can Çakmak,[2] Ersan Tatlı[3]

[1]*Sakarya Yenikent State Hospital, Sakarya, Türkiye*
[2]*Sakarya PamukovaState Hospital, Sakarya, Türkiye*
[3]*Focus Heart and Arrhythmia Center, Sakarya, Türkiye*

Introduction and Aim: Left main coronary artery (LMCA) bifurcation lesions are among the most complex lesions encountered in percutaneous coronary intervention. Particularly in patients with a short LMCA anatomy, selection of an appropriate stenting technique becomes more challenging, and intravascular imaging plays a crucial role in determining the optimal bifurcation strategy and achieving procedural success. We present a case of successful percutaneous coronary intervention using an intravascular ultrasound (IVUS)-guided DK-miniCulotte technique in a patient with a critically diseased LMCA bifurcation and a short LMCA measuring approximately 4 mm, who declined surgical revascularization.

Case Report: An 80-year-old woman with a history of hypertension presented with progressively worsening exertional chest pain over the preceding 15 days. Coronary angiography performed at an outside center revealed critical stenoses at the ostium and distal segment of the LMCA, proximal left anterior descending artery (LAD), and ostium of the circumflex artery (Cx). Coronary artery bypass grafting (CABG) was recommended; however, the patient declined surgical treatment and was therefore referred to our center for percutaneous coronary intervention. During the procedure, severe angina and hypotension developed upon catheter engagement because of the critical LMCA ostial stenosis. To achieve hemodynamic stabilization, predilatation from the LMCA toward the Cx was performed using a 3.0×15 mm non-compliant (NC) balloon. IVUS examination was performed through both the Cx and LAD to determine the optimal treatment strategy. IVUS demonstrated an LMCA length of approximately 4 mm and severe calcific critical stenosis at the ostium. Considering the short LMCA anatomy and complex bifurcation morphology, a DK-miniCulotte strategy was selected. First, a 4.5×24 mm Synergy™ stent was implanted from the Cx into the LMCA. Because of inadequate stent expansion at the LMCA ostium, postdilatation was performed using 4.0×8 mm and 5.0×8 mm NC balloons. The LAD was then rewired through the distal stent struts, and the first kissing balloon inflation was performed using two 3.0×15 mm NC balloons (Fig. 1). Subsequently, a 3.5×26 mm Medtronic stent was implanted from the LMCA into the LAD in accordance with the DK-miniCulotte technique, followed by postdilatation with a 5.0×8 mm NC balloon. The Cx was then rewired, and final kissing balloon inflation was performed using two 3.0×15 mm NC balloons, followed by re-Proximal Optimization Technique (re-POT) with a 5.0×8 mm NC balloon. Final IVUS assessment demonstrated adequate stent expansion and apposition, with no significant residual stenosis, and TIMI 3 flow was achieved (Fig. 2).

Conclusion: In complex bifurcation lesions with a short LMCA anatomy, the IVUS-guided DK-miniCulotte technique may facilitate accurate assessment of anatomical characteristics and selection of an appropriate interventional strategy. This intravascular imaging-guided approach, together with meticulous procedural optimization, may enable safe and effective percutaneous revascularization.

Keywords: Coronary bifurcation, DK-miniCulotte, Left main coronary artery.