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Can the SYNTAX Score Focused on the Evaluation of Chronic Total Occlusion (CTO) be a Useful Predictor of Successful Revascularization in CTO-PCIs? Comparison with the J-CTO Score.
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Background: CTO intervention is still challenging because of the limited procedural success rate. The SYNTAX score is a unique tool to score complexity of coronary artery disease involving CTO lesion, but it is not specific for CTOs.

Methods: We evaluated whether the SYNTAX score focused on the evaluation of CTO lesions (the Sys-CTO score) could predict successful revascularization for CTO-PCI or not, compared with the J-CTO score. We investigated the Sys-CTO score and the J-CTO score in consecutive 257 lesions treated with coronary angioplasty for CTOs. The Sys-CTO score was validated on each CTO lesion by extracting from the SYNTAX Calculator 2.1. The J-CTO score was determined by assigning one point for each independent parameter using the J-CTO score sheet.

Results: Overall successful revascularization rate was 85.2% (219/257), and the average the Sys-CTO score and J-CTO score were 12.3±6.2, 1.75±1.30, respectively. We divided all CTO lesions into two groups; the successful revascularized groups (n=219; Sys:12.3±6.2) and the failed revascularized group (n=38; FG). Relationship between the value of the J-CTO score and successful revascularization rate (%) were shown as follows; (0):100, (1):93.4, (2):83.5, (3):66.7, (4):61.1, respectively. As for the J-CTO score, there were significant differences between the two groups; (1):68.9±1.5, (2):7.1±4.1 (p<0.05). Whereas, as for the Sys-CTO score, there were balanced between the two groups; Sys:12.3±6.3, FG:12.3±5.2. In the detailed evaluation of the Sys-CTO score, these distinctive six parameters seemed to be predictive factors inhibiting successful revascularization (p<0.05). Beyond the segment visualization contrast ≥1 segment (FG:34.2%/CTO:25.1%), Blunt stump (FG:63.1%/CTO:45.2%), Bridging (FG:34.2%/CTO:12.3%), Severe tortuosity (FG:26.3%/CTO:19.6%), Heavy calcification (FG:42.1%/CTO:23.7%), Diffuse diseased and narrowed segment (FG:36.8%/CTO:31.5%).

Conclusions: The J-CTO score was reconfirmed as the predictor of a successful revascularization for CTO-PCIs. On the other hand, the Sys-CTO score could not be predictive factor by itself. However, these distinctive six parameters could be a useful predictor of a successful revascularization for CTO PCI as well as the J-CTO score.

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Long-Term Outcomes of Percutaneous Coronary Intervention for Chronic Total Occlusions with Retrograde Approach
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Background: There is a paucity of data on the long-term clinical outcomes of successful percutaneous coronary intervention (PCI) of coronary chronic total occlusion (CTO) using the retrograde approach. The purpose of this study was to report on the outcomes of all attempted retrograde PCI for a complete coronary revascularization in patients with chronic total occlusion (CTO) of left anterior descending artery (LAD) in patients with a complete coronary revascularization.

Methods: From a single-center prospective registry, 1343 consecutive patients who underwent retrograde CTO PCI from October 2004 to 2010, 644 patients underwent a successful PCI for CTO (>3 months) with a complete coronary revascularization within one month. The prognostic impact of LAD-CTO on cardiac mortality was assessed by Kaplan-Meier estimation and by forward stepwise Cox regression multivariate analysis.

Results: A successful CTO-PCI with a complete coronary revascularization was achieved in 194 patients with LAD-CTO and in 450 patients with non-LAD-CTO. Baseline characteristics of patients with LAD-CTO vs. non-LAD-CTO were similar: mean age 68±11 vs. 67±11 yrs, male 83% vs. 86%, diabetes 22% vs. 23%, previous myocardial infarction 51% vs. 48%, acute coronary syndrome at admission 34% vs. 29%, 3-vessel coronary disease 38% vs. 32%, left ventricular ejection fraction <35% 19.7% vs. 13.9%, mean age at first PCI >70 years (p=0.001) and less tapered morphology (31.7 vs 46.5% in LAD-CTO 51% vs. 57% in non-LAD CTO). Multivariate analysis of the independent predictors relating to cardiac mortality were LAD-CTO (HR 2.9; p=0.025), age (HR 1.1; p=0.002) and EF <40% (HR 1.4; p=0.001).

Conclusions: The successful treatment of non-LAD CTO associated with a complete revascularization links with a very high survival rate. LAD-CTO is a predictor of cardiac mortality despite the completeness of coronary revascularization.