

## Outcomes of 7560 chronic total occlusion patients undergoing percutaneous coronary intervention: results from a Dutch nationwide registry

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**Background:** The presence of a chronic total coronary occlusion (CTO) is associated with worse clinical outcomes. We aimed to identify CTO patients that are at risk of these outcomes in a nationwide registry.

**Methods:** The Netherlands Heart Registration (NHR) is a nationwide registry that registers outcomes of cardiac interventions. For the purpose of this analysis, the data of all patients undergoing PCI from inception of the NHR to December 2019 were selected, that included PCI with at least one CTO in one of the treated coronary arteries. We used multivariate logistic regression of baseline characteristics for the outcome measures target vessel revascularization (TVR) <1 year, 30-day myocardial infarction (MI) and 1-year mortality. The impact of the assessed risk factors on outcomes was described as odds ratio (OR) with corresponding 95% confidence intervals (CI).

**Results:** A total of 7560 patients underwent PCI with  $\geq 1$  CTO in one of the treated arteries between January 1, 2015 until December 31, 2018 (mean age  $65 \pm 10$  years, 77.4% male [ $n=5850$ ]). Five percent of patients deceased within 1 year after PCI ( $n=375$ ), TVR <1 year occurred in 11% ( $n=525/4804$ ) and 30-day MI occurred in 0.5% (25/4985). In multivariate re-

gression, the only predictor for TVR <1 year was the presence of diabetes mellitus (OR 1.29, 95% CI 1.06–1.56). Predictors for the outcome MI <30 days were female gender (OR 2.24, 95% CI 1.05–4.79), chronic kidney disease (OR 3.94, 95% CI 1.15–13.50) and cardiogenic shock at presentation (OR 7.94, 95% CI 2.28–27.7). Strong predictors for 1 year mortality were the presence of cardiogenic shock at presentation (OR 17.86, 95% CI 2.90–109.92) and the presence of chronic kidney disease (OR 4.56, 95% CI 2.04–10.16), other predictors were age (OR 1.04, 95% CI 1.01–1.07), female gender (OR 1.83, 95% CI 1.08–3.10), diabetes (OR 1.66, 95% CI 1.01–2.73) and left ventricular ejection fraction (LVEF; OR 0.95, 95% CI 0.93–0.97).

**Conclusion:** In this nationwide registry of 7560 CTO patients undergoing PCI, cardiogenic shock and chronic kidney disease were strong predictors for 1 year mortality and 30 day MI. Diabetes mellitus was the only predictor for the occurrence of TVR <1 year. Identification of patients at risk for poor clinical outcomes may help improve the outcomes of CTO patients in the future.