Temporal Trends in Incidence and Outcomes of Patients with CTO undergoing Percutaneous Coronary Intervention.

Background:
Chronic total occlusion (CTO) of non-infarct related coronary arteries (non-IRA) are common findings in contemporary coronary angiograms in patients with coronary artery disease.\textsuperscript{1-5} Specifically, about 8-13\% of patients with acute myocardial infarction (AMI) have CTO of non-IRA.\textsuperscript{2,5-8} In these patients, the prognosis is worse than for those without CTO.\textsuperscript{9} This study describes the trend in incidence and outcomes of PCI in patients presenting with AMI and concurrent CTO of a non-IRA.

METHODS
Our study included patients 18 years or older with a primary diagnosis of acute myocardial infarction (AMI) admitted between 2008 and 2013. Among the patients with AMI, we extracted patients who had percutaneous coronary intervention. We compared clinical characteristics and outcomes between patients with and without CTO who underwent PCI. The primary outcomes of interest were in-patient mortality, the need for coronary artery bypass graft surgery (CABG) in the same admission. We performed multivariate logistic regression analysis to evaluate if CTO was an independent predictor of our outcomes of interest. We also performed regression analysis to assess for independent predictors of mortality among patients in the CTO group.

Results:
1,625,824 patients were included in our analysis. The average age was 62.9±13.1 years and 40.8\% (n= 663,267) were female. Chronic total occlusion was reported in 11.9\% of these patients. The incidence of CTO over the six years of our study ranged from 9.6\% in 2008 to 14.0\% in 2013. The linear trend for increasing incidence of PCI IRA associated with CTO during those years was statistically significant (p<0.001). Patients with CTO were older with a mean age of 63.01±12.9 and were more likely to have peripheral vascular disease, carotid artery disease and have histories of PCI and CABG.

Patients with CTO had a statistically higher proportion of cardiac arrest, cardiogenic shock, respiratory failure, gastrointestinal bleeding, and vascular complications (p<.001 for all interactions). More patients in the CTO group required balloon counterpulsation, intubation/mechanical ventilation and received more blood transfusion (p<.001 for all interactions). They were also more likely to need transfer to another hospital. The length of stay in the CTO group was also statistically higher than in patients without CTO. The need for CABG was and mortality were significantly higher in the CTO group (2.7\% vs. 1.8\%, p<.001 and 2.8 vs. 2.6, p=.004 respectively).

Conclusion:
The study found an increased incidence of percutaneous coronary intervention for acute myocardial infarction in and chronic total occlusion in a non-infarct related artery. Additionally, CTO was found to be an independent predictor of CABG, need for OSH transfer and mortality.
References:


