Association of Secondary Cerebrovascular Ischemia and Hemorrhagic Risk with Patterns of Antiplatelet Medication after Carotid Stenting

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Disclosures

- None
Introduction

- Acute ischemic stroke occurs in up to 800,000 patients in the United States each year\(^1\)

- Carotid artery stenting (CAS) is a viable alternative to carotid endarterectomy (CEA) in patients with carotid stenosis (CREST Trial)\(^2\)

- Ischemic stroke remains a concern following stent placement

- There is no consensus regarding the ideal duration of dual antiplatelet therapy following CAS

Methods

- Patients with **carotid stenosis** receiving **CAS** or **CEA** between 2007 and 2016 were identified from the IBM MarketScan Database
  - ICD-9/10 Diagnosis Codes
  - CPT Procedure Codes

- At least **6 months** of continuous post-surgery follow-up was required

- Multivariable regression models (logistic regression and Cox proportional hazards) and propensity score matching were used to **determine factors** linked to post-operative stroke risk
Impact of Clopidogrel Prescription Length on Stroke Risk

Panel A. Post-stent risk of ischemic stroke stratified by duration of clopidogrel prescribing

Panel B. 6-month post-stent ischemic stroke risk stratified by duration of clopidogrel prescribing

Subsequent Propensity Score Matched Analysis:
- Patients receiving >180 days of clopidogrel were less frequently admitted for stroke during the 6 months after stent placement
  - 3.2% vs 4.8%, p = 0.004

*Matched cohort were generated after balancing baseline characteristics using propensity score matching. Variable balance was confirmed by computing standard mean difference of included factors.
Hemorrhagic Complications

Panel A. Extracranial hemorrhage risk, but not intracranial hemorrhage risk, was significantly higher while on clopidogrel after carotid stenting.

Panel B. Extracranial hemorrhage risk increased linearly while on clopidogrel while risk of intracranial hemorrhage plateaued following the early post-stent period.

Panel C. While intracranial hemorrhage was more common during the 30 days after stent placement, extracranial hemorrhage was the predominant complication during the late post-stent period.

(Line plots correspond to left y-axis while grey bars correspond to right y-axis. Bars indicate fraction of hemorrhages that were extracranial.)
Discussion

- Extended duration of clopidogrel use after carotid artery stenting may reduce risk of ischemic stroke

- Propensity matched analysis reaffirmed that duration of clopidogrel prescribing following stent placement was inversely correlated with risk of ischemic stroke

- Limitations of our study include the potential for miscoded diagnoses and procedures, using prescription records as a proxy for pharmaceutical use, and potential underlying selection bias not reflected in characteristics available in the dataset
Summary Points

- Prolonged clopidogrel use following stent placement may reduce the risk of ischemic stroke.

- Extracranial hemorrhage risk increases significantly in patients receiving clopidogrel, and cost-benefit analyses are needed to guide clinical decision-making.