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Cangrelor use in patients undergoing percutaneous coronary intervention or neurointervention with stent placement in a community hospital

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BACKGROUND

- Cangrelor (Kengreal) is a direct acting, reversible, IV P_2Y_{12} receptor antagonist
- It is approved by the FDA as an adjunct to percutaneous coronary intervention (PCI) to reduce the risk of periprocedural myocardial infarction (MI), repeat coronary vascularization, and stent thrombosis in patients who have not received an oral $P2Y_{12}$ inhibitor or glycoprotein IIb/IIIa inhibition
- The novel advantage of cangrelor includes its rapid onset (within 2 min) and offset of action (1 hr post end of infusion)
- The CHAMPION-PHOENIX trial demonstrated that cangrelor was associated with a lower risk of recurrent MI or stent thrombosis at the cost of an increase in minor bleeding with no difference in major bleeding compared to clopidogrel
- Due to its limited niche, marginal clinical outcomes benefit, significant cost burden and refuted place in therapy, cangrelor is a non-formulary (NF) medication at Baptist Hospital (BH); its medical necessity is evaluated on a case-by-case basis in PCI patients
- Due to its quick onset and offset, cangrelor has also been studied in an off-label fashion for use during neurovascular interventions and as a bridge to cardiac surgery

PURPOSE

To evaluate the appropriateness of cangrelor use and determine if patient selection was optimal as a non-formulary agent in a community hospital

METHODS

- Single center retrospective observational study
- Evaluation period: January 1st, 2018 to January 31st, 2019
- Inclusion criteria: Patients receiving at least one dose of cangrelor during evaluation period
- Primary outcomes:
  - Compliance with the FDA labeled use
  - Appropriate transition to an oral P_2Y_{12} agent
- Secondary outcomes:
  - Compliance with BH criteria for NF usage
  - Adverse drug events
  - Mortality rate
  - Length of stay (LOS)
  - 30-day readmission rate due to cardiovascular or neurological event
- Descriptive statistics used in analysis

RESULTS

Patient Characteristics, n=28	
Type of intervention	• PCI w/ stent = 18/28 • Cerebral angiography w/ stenting = 9/28 • Cerebral angiography w/ mechanical thrombectomy/ angioplasty = 1/28
Mean age, years (range)	63 (36-88)
Gender – male, n (%)	16/28 (57)
Admitting diagnosis	• STEMI = 13 • NSTEMI = 3 • V Fib arrest/ Cardiogenic shock=2 • Intracranial aneurysm = 5 • Ischemic stroke = 5

Primary Outcomes, n (%)	PCI (n=18)	Neuro (n=10)
Compliance with FDA labeled use	14/18 (78)	Off-label (N/A)
Transition to oral P2Y12 agent	17/17 (100)*	10/10 (100%)

Secondary Outcomes	PCI (n=18)	Neuro (n=10)
Compliance with NF criteria	13/18 (72)	N/A
Adverse drug events, n (%) **• Thrombotic event** **• Bleeding**	1/18 (5.5)^ 3/18 (16.7)^^^	2/10 (20)^^ 4/10 (40)
Mortality rate, n (%)	2/18 (11.1)**	2/10 (20)**
Median LOS, days (range)	3.9 (0.1-33)	9.25 (2.5-18.3)
30-day Readmission rate, n (%)	2/16(12.5)	1/8 (12.5)**

*** 1 patient expired prior to completion of procedure**
^ claudication
^^ Evolving stroke or hypercoagulable state
^^^ access site bleeding or hematoma
**** not related to cangrelor use**

DISCUSSIONS / CONCLUSIONS

- Of the total cangrelor use during the review period, 64% (18/28) patients received it for a PCI and 36% (10/28) received it during a neuro intervention
- 78% of PCI patients met FDA labeled indication for cangrelor, primary reason for non-compliance included oral P_2Y_{12} loading dose preceding cangrelor administration in 4/18 (22%) patients
- In neuro intervention patients ticagrelor load was administered concurrent to cangrelor infusion
- Cangrelor use was justified in 72% of coronary patients per BH criteria for NF usage
- All eligible patients were transitioned to an oral agent prior to completion of cangrelor infusion
- Cangrelor administration was documented in all patients; however, specific bolus or infusion doses and duration of infusion was not documented accurately and/or consistently
- Opportunities to improve cangrelor use at BH were identified including:
  - Procedural room staff education to enhance documentation of drug, dose and duration on patient profile
  - Need to revisit formulary status and establish drug specific prescribing criteria for use in in both Cardio and Neuro patients

LIMITATIONS

- Small sample size
- Due to incomplete documentation of dose and duration, unable to assess accurate bolus, infusion and duration in all patients
- Limited published literature to assess for appropriate dose, duration , safety and efficacy in patients with neurovascular intervention

DISCLOSURES

All authors of this presentation have nothing to disclose.

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