Retrospective Analysis of Appropriate Usage of Cangrelor in a Community Hospital Cardiac Catheterization Laboratory

Abigail Capps, Pharm.D. Candidate
Kacie Monson, Pharm.D., BCPS

SOUTHERN ILLINOIS UNIVERSITY EDWARDSVILLE SCHOOL OF PHARMACY

Background

- Cangrelor is a reversible intravenous (IV) antiplatelet that inhibits the $P2Y_{12}$ receptor[1,2]
- It is used in Percutaneous Coronary Interventions (PCIs) due to its quick onset of action of approximately two minutes. Platelet function returns to normal reactivity about an hour after infusion discontinuation[1,2]
- Cangrelor is dosed as a 30 mcg/kg bolus followed by a 4 mcg/kg/min infusion[3]
  - Cangrelor is recommended to be infused for two hours, or the entire duration of the PCI, whichever is the longest[3]
- The main adverse event with cangrelor is bleeding and it is contraindicated in patients with an active bleed[4]
- The rate of bleeding was about 0.56% with cangrelor in the CHAMPION PHOENIX trial, which was not significantly increased from clopidogrel alone[5]
- BJC HealthCare has approved the use of cangrelor in the cardiac catheterization lab if the patient meets one of the following criteria:
  - High risk stable elective PCI cases with complex anatomy not loaded with an oral $P2Y_{12}$ inhibitor within 2 hours of the procedure
  - NSTEMI/UA undergoing urgent PCI and not loaded with an oral $P2Y_{12}$ inhibitor and will go to the cath lab within 2 hours for PCI
  - STEMI patient in which GPIIbIIIa inhibitors are not planned to be used, bivalirudin or heparin will be used, and the patient was not loaded with an oral $P2Y_{12}$ inhibitor prior to PCI

Purpose

- To evaluate if the patients met the BJC approved criteria for use to receive cangrelor during a PCI at Memorial Hospital Belleville and Memorial Hospital East

Methods

- Study design: retrospective chart review
- Inclusion criteria:
  - Age ≥ 18 years old
  - Cangrelor administered for use during a PCI between 12/1/18 to 6/1/19 at Memorial Hospital Belleville and Memorial Hospital East
- Exclusion criteria:
  - Cangrelor pulled from the automated dispensing cabinet under the patients name, but was never used and later returned
  - Cangrelor used for bridging therapy while holding oral antiplatelets
- A report was generated for all patients that had cangrelor pulled from the automated dispensing cabinet during his or her stay
- Primary outcome: appropriate usage of cangrelor based on BJC HealthCare's criteria for use
- Secondary outcomes:
  - Bleed occurrence during PCI
  - Bleed occurrence within 72 hours of procedure
  - Death due to MI/ACS/CVA or bleeding during hospital stay
  - Readmission to Memorial due to MI/ACS or bleeding associated events within 30 days of discharge
- Provider trends
- Events not meeting bleed definition

Results

Table 1. Patient Information	**Total,** No. (%)
All Patients	**(n=47)**
Patients with cangrelor administered in the cath lab	**(n=42)**
Patients with high risk stable elective PCI	12 (28.6)
Patients with NSTEMI	12 (28.6)
Patients with STEMI	18 (42.9)
Patient location during PCI	
Memorial Hospital Belleville	26 (61.9)
Memorial Hospital East	16 (38.1)
Appropriate criteria for cangrelor use met	
Yes	41 (97.6)
No	1 (2.4)

Table 2. Provider Trends	**Total,** No. (%)
Number of PCI procedures performed using cangrelor	
Provider A	17 (40.5)
Provider B	12 (28.6)
Provider C	2 (4.8)
Provider D	10 (23.8)
Provider E	1 (2.4)
Appropriate dosing of cangrelor	
Yes	38 (90.5)
No	3 (7.1)
Unknown	1 (2.4)
Duration of cangrelor infusion	**(n=41)**
Less than 2 hours	1 (2.4)
2 hours	30 (75)
2-3 hours	4 (9.8)
Greater than 3 hours	6 (14.6)
Average infusion duration per provider	
Provider A	2.4 hours
Provider B	3.1 hours
Provider C	2.9 hours
Provider D	1.9 hours
Provider E	2 hours
$P2Y_{12}$ inhibitor used post procedure	**(n=37)**
Ticagrelor	37 (100)
Dual antiplatelet therapy prescribed at discharge	**(n=35)**
Yes	33 (94.3)
No	2 (5.7)

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Results

Table 3. Outcomes	**Total,** No. (%)
Bleed occurrence during PCI	1 (2.4)
Bleed occurrence within 72 hours of procedure	2 (5)
Death due to MI/ACS/CVA during hospital stay	2 (4.8)
Death due to bleeding associated event during hospital stay	0 (0)
Readmission to Memorial due to MI/ACS within 30 days of discharge	1 (2.5)
Readmission to Memorial due to bleeding associated event within 30 days of discharge	0 (0)

Table 4. Events not meeting bleed definition	**Total,** No. (%)
Hemoglobin change	
Hgb drop of greater than or equal to 3 g/dL with no identified source	7 (17)
Adverse Events	
Pseudoaneurysm without a Hgb drop greater than or equal to 3 g/dL	2 (4.8)
Retroperitoneal bleed without a Hgb drop greater than or equal to 3 g/dL	1 (2.4)

Conclusions

- Only one patient received cangrelor without meeting approved criteria for use due to the patient being on an oral $P2Y_{12}$ inhibitor prior to admission
- Education to nursing staff is recommended regarding returning cangrelor vials not used, crediting patients' profiles and ensuring documentation of dosing is consistent
- Education to physician staff is recommended regarding appropriate criteria for use and infusion duration for cangrelor

References

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Contact/Disclosures

- Abigail Capps- Nothing to disclose. Email: abcapps@siue.edu
- Kacie Monson- Nothing to disclose.