

# Is Pantoprazole a Must in Patients Prescribed with Clopidogrel? A Single Centre Retrospective Study

Luk Kin Long Ben, Lam Siu Kei Samuel, Yam Kwong Yui  
Tuen Mun Hospital



屯門醫院  
TUEN MUN HOSPITAL

# *Introduction*

- With the advancement of endovascular treatment, demand on antiplatelet agents has risen dramatically.
- Adverse effects of antiplatelet agents have become a concern namely gastrointestinal side effects. Pantoprazole is a common medication used for peptic ulcer prophylaxis.
- Questions to ask: Does pantoprazole affect clopidogrel antiplatelet function? Does pantoprazole significantly prevent peptic ulcer in patients on clopidogrel?
- Primary outcome: Clopidogrel resistance in patients with and without pantoprazole use
- Secondary outcome: Peptic ulcer incidence in patients with and without pantoprazole use

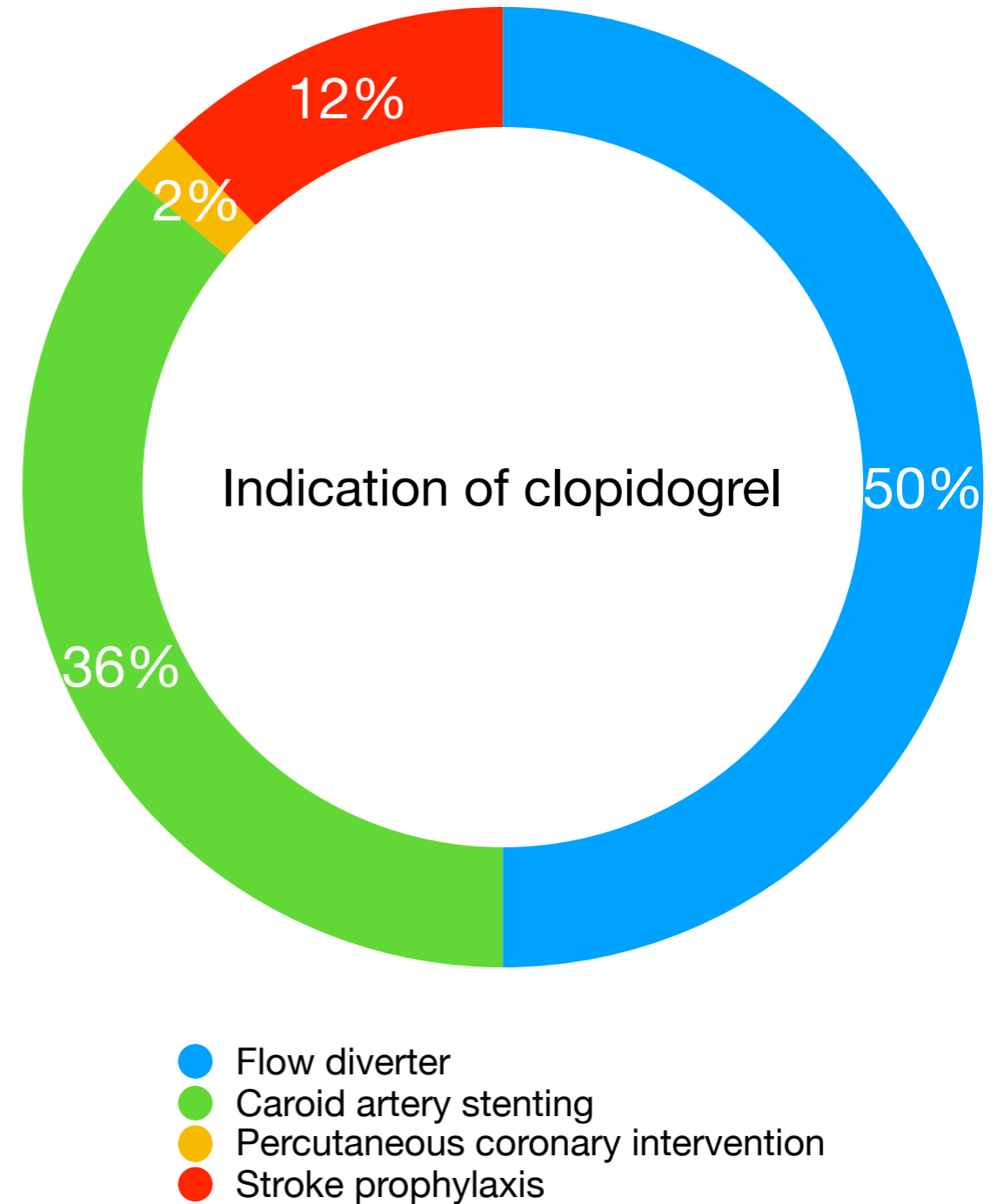
# *Method*

- Retrospective single centre study
- Patients prescribed with clopidogrel who underwent VerifyNow testing under the department of Neurosurgery in Tuen Mun Hospital from year 2015 to 2019 were recruited (n = 108)
- Clopidogrel resistance defined quantitatively by VerifyNow with cutoff value of >208
- Peptic ulcer diagnosed endoscopically
- Statistical tests: Chi-square and T-test employed for categorical and continuous data respectively; Statistical significance defined as P value of  $\leq 0.05$

# Demographics

*n* = 108

	Frequency
Age	61 +/- 11 (32 -85)
Gender	M: 62; F: 46
Smoking	48 (44.4%)
Concurrent NSAIDs use	1 (0.9%)
Concurrent Aspirin use	102 (94.4%)
Peptic ulcer	4 (3.7%)
Clopidogrel resistance	34 (31.5%)
Pantoprazole use	41 (38%)



# Result

<i>Confounding factors between Pantoprazole use vs No pantoprazole use</i>	Pantoprazole use (n = 41)	No pantoprazole use (n = 67)	P value
Age	62 +/- 11	57 +/- 11	0.252
Gender	M 21; F 20	M 41; F 26	0.324
Smoking	16 (39.0%)	32 (47.8%)	0.428
Concurrent NSAIDs use	0 (0%)	1 (1.5%)	1.000
Concurrent Aspirin use	40 (97.6%)	62 (92.5%)	0.405
Peptic ulcer	1 (2.4%)	3 (4.5%)	1.000
Clopidogrel resistance	17 (41.4%)	17 (25.4%)	0.092

<i>Possible factors leading to clopidogrel resistance</i>	Clopidogrel resistance (n = 34)	No clopidogrel resistance (n = 74)	P value
Age	65 +/- 11	59 +/- 11	<b><u>0.011</u></b>
Gender	M 18; F 16	M 44; F 30	0.537
Smoking	10 (29.4%)	38 (51.4%)	<b><u>0.039</u></b>
Concurrent NSAIDs	0 (0%)	1 (1.4%)	1.000
Concurrent Aspirin	32 (94.1%)	70 (94.6%)	1.000
Concurrent Pantoprazole use	17 (50%)	24 (32.4%)	<u>0.092</u>

# Result

- No statistical significance in confounding factors between pantoprazole and non-pantoprazole groups
- Higher percentage of clopidogrel resistance was found in patients with concurrent pantoprazole use (50%) when comparing with those without (32.4%) though it was not statistically significant ( $P = 0.092$ )
- Advanced age and non-smoker were found to result in higher incidence of clopidogrel resistance ( $P = 0.011$ ;  $P = 0.039$  respectively)
- Pantoprazole use has no statistical significance in peptic ulcer prophylaxis ( $P = 1.000$ )

# Discussion

- Clopidogrel is a prodrug; it is metabolised into its active form by cytochrome P450 system which in turns inhibits P2Y12 ADP receptor on platelet  $\rightarrow$   $\downarrow$  platelet aggregation
- Pantoprazole metabolism involves demethylation by \*CYP 2C19 hence postulated to be a competitive inhibitor to clopidogrel
- Polycyclic aromatic hydrocarbon in cigarette induces \*CYP 1A2 which is responsible for oxidative step in clopidogrel conversion to its active form

\*Part of the cytochrome P450 system

# *Conclusion*

- Our study showed that there is a trend in which concurrent pantoprazole use may contribute to clopidogrel resistance
- Use of VerifyNow in patients taking clopidogrel is recommended especially for patients with advanced age or being a non-smoker
- Peptic ulcer incidence is low (3.7%) in our cohort and routine use of pantoprazole should be reconsidered
- Further studies with larger sample size is recommended