High Platelet Reactivity (HPR) in Maori and Diabetic patients

- High on-treatment platelet reactivity has been associated with poor outcomes following acute coronary syndromes (ACS).
- Previous studies had demonstrated while on clopidogrel, HPR remained to be associated with
  - Diabetic patients
    - Insulin resistance causes upregulation of P2Y12 pathway
  - Maori Ethnicity
    - CYP2C19*2 alleles associated with HPR (Larsen et al)
Ticagrelor for these high risk patients

• More potent antiplatelets, ie ticagrelor / prasugrel is likely to be a better treatment choice in these patients.

Larsen et al

Fig. 1. Platelet reactivity (AU×min) of patients with HFR, pre and post 60 mg prasugrel loading. The dotted horizontal line represents the 90 AU×min cut-off for HFR.
Objectives of study:

1. Establish frequency of ticagrelor use in Maori and Diabetic patients
2. Establish if Maori ethnicity or diabetes remained predictive of HPR on ticagrelor.

Methods

• Data prospectively gathered of 1224 ACS patients presenting to Wellington Regional Hospital from June 2012 to June 2016
• All patients had undergone platelet function testing with multiplate assay prior to undergoing coronary angiography.
• HPR was defined as greater than 47 AU
Patient Characteristics

<table>
<thead>
<tr>
<th></th>
<th>ACS population (1224)</th>
<th>Ticagrelor Population (311)</th>
<th>Clopidogrel Population (913)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>63.5 (SD 10.8)</td>
<td>61.37 (SD 9.8)</td>
<td>64.2 (SD 11.1)</td>
</tr>
<tr>
<td><strong>BMI (kg/m2)</strong></td>
<td>29.3 (SD 5.7)</td>
<td>29.2 (SD 9.8)</td>
<td>29.3 (SD 5.8)</td>
</tr>
<tr>
<td><strong>Other Cardiac Risk Factors</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HTN</td>
<td>747 (61%)</td>
<td>170 (54.7%)</td>
<td>577 (63.2%)</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>830 (67.8%)</td>
<td>201 (64.4%)</td>
<td>629 (68.9%)</td>
</tr>
<tr>
<td>Smoker</td>
<td>286 (23.4%)</td>
<td>79 (25.4%)</td>
<td>207 (22.7%)</td>
</tr>
<tr>
<td>Family Hx</td>
<td>432 (35.3%)</td>
<td>123 (39.5%)</td>
<td>309 (33.8%)</td>
</tr>
<tr>
<td><strong>Clinical Presentation</strong></td>
<td></td>
<td></td>
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<tr>
<td>STEMI</td>
<td>253 (20.6%)</td>
<td>37 (11.8%)</td>
<td>216 (23.6%)</td>
</tr>
<tr>
<td>NSTE-ACS</td>
<td>971 (79.4%)</td>
<td>274 (88.2%)</td>
<td>697 (76.3%)</td>
</tr>
</tbody>
</table>

Diabetic Patients were Less Likely to be Prescribed Ticagrelor

Odds Ratio  0.64 CI 0.45-0.91, p= 0.01
Ticagrelor usage and Maori Ethnicity

High on Treatment Platelet reactivity
High on Treatment Platelet Reactivity

Uptake of Ticagrelor

- Our study shows a low usage of ticagrelor in overall ACS patients (25%)
- Usage of ticagrelor in diabetic subpopulation was significantly lower than the overall ACS population.
- There is a trend of ticagrelor use in ‘healthier patients’ → ? Unfamiliarity with drug causing it to be less used in patients with high bleeding risk ie more comorbidities
Discussion on HPR

• Our study indicates:
  • High platelet reactivity remains significant in diabetics and patients of Maori Ethnicity after clopidogrel loading
  • This may result in increased future cardiovascular events.
• The risk of HPR in Diabetic and Maori population is attenuated by the loading of ticagrelor at presentation with ACS.
• There is a clear benefit of ticagrelor over clopidogrel in terms of HPR
• This may translate into reduction in MACE events in this populations.

Conclusion

• Ticagrelor prescribing is low in the diabetic population in our cohort. Reasons of this requires further investigation.
• In diabetic and Maori patients on clopidogrel, High Platelet Reactivity persists compared to other ACS patients on clopidogrel.
• Awareness of HPR and benefits of ticagrelor may increase prescribing of ticagrelor these population groups.
• Thank you