PHARMACODYNAMIC EFFECTS OF DIFFERENT ASPIRIN DOSING REGIMENS IN TYPE 2 DIABETES MELLITUS PATIENTS WITH CORONARY ARTERY DISEASE

i2 Poster Contributions
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Background: Patients with type 2 diabetes mellitus (T2DM) have reduced aspirin-induced pharmacodynamic effects. This may be attributed to increased platelet turnover rates resulting in an increased proportion of non-aspirin inhibited platelets during the daily dosing interval. The hypothesis of this study was that an increase in the frequency of drug administration [twice daily (bid) vs once daily (od)] may provide more effective platelet inhibition in T2DM patients.

Methods: T2DM patients with stable coronary artery disease (CAD) were prospectively recruited. Patients modified their aspirin regimen on a weekly basis according to the following scheme: 81mg/od, 81mg/bid, 162 mg/od, 162 mg/bid, 325mg/od. Pharmacodynamic assessments included: light transmittance aggregometry (LTA) following arachidonic acid, collagen and adenosine diphosphate stimuli; VerifyNow-Aspirin; serum thromboxane B2 levels.

Results: Twenty patients were analyzed. When aspirin was administered once daily, there was no significant effect on platelet reactivity by increasing the once daily dosing using aspirin sensitive assays (collagen-induced aggregation and VerifyNow-Aspirin). An increase in aspirin dose by means of a second daily administration was associated with a significant reduction in platelet reactivity assessed by collagen-induced aggregation and VerifyNow-Aspirin between 81mg/od and 81mg/bid (p<0.05 for both assays) and between 81mg/od and 162mg/bid (p<0.05 for both assays). There was no impact of aspirin dosing regimens on adenosine diphosphate-induced aggregation. A dose-dependent effect of aspirin was observed on serum thromboxane B2 levels (p=0.003).

Conclusions: Aspirin dosing regimens are associated with different pharmacodynamic effects in platelets from T2DM patients and stable CAD, with a twice daily low-dose aspirin administration resulting in greater platelet inhibition than once daily administration as assessed by aspirin sensitive assays and a dose-dependent effect on serum thromboxane B2 levels. The clinical implications of a modified aspirin regimen tailored to T2DM patients warrants further investigation.