

Evaluation of the Point of Care Helena ICHOR/Plateletworks® and the Accumetrics Ultegra® RPFA for Assessment of Platelet Function Inhibition by Platelet GPIIb-IIIa Antagonists

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Background: Anti-platelet therapy is standard of care for patients as an adjunct to percutaneous coronary intervention (PCI) or for the medical management of non-ST elevation acute coronary syndromes (NSTEMI/ACS). Recent clinical trials indicate that the three currently approved agents, eptifibatid, tirofiban and abciximab, may vary in the intensity of platelet aggregation inhibition at the approved doses. Thus, further pharmacodynamic evaluations of these agents to determine the extent of platelet function inhibition, especially during the periprocedural time of cardiac intervention, are required. A rapid measurement device as a surrogate for light transmission aggregometry (LTA), the current accepted standard, would be ideal to have the option for antagonist dose monitoring or dose adjustment prior to or during an intervention. One such instrument, the Helena ICHOR/Plateletworks® may be useful as a rapid and accurate monitoring device.

Methods: Blood samples collected in PPACK anticoagulant were treated with increasing concentrations of the small molecule inhibitor, eptifibatid or tirofiban. LTA was carried out in conjunction with Plateletworks® and the Accumetrics Ultegra® RPFA, another rapid platelet function analysis device.

Results: This study demonstrates that measured platelet inhibition by Plateletworks® mirrors the extent of inhibition of platelet aggregation (IPA) obtained with LTA ($r^2=0.965$). In contrast, the Ultegra® device had less correlation when compared to LTA ($r^2=0.625$), until the Ultegra® inhibition levels reached 95% or greater.

Conclusions: Based on these data, the Plateletworks® utilized under these newly described guidelines may serve as a surrogate for LTA when rapid measurements are necessary for the evaluation of antiplatelet therapies.

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