ASSESSMENT OF PLATELET REACTIVITY WITH MULTIPLE ELECTRODE IMPEDANCE AGGREGOMETRY (MEA) IN PATIENTS RECEIVING TICARGELOR

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INTRODUCTION

Monitoring platelet reactivity during P2Y12-inhibitors helps prevent stent thrombosis (ST) and/ or bleeding. High platelet reactivity (HPR) is associated with an increased risk for ischaemic complications, while low platelet reactivity (LPR) is associated with greater bleeding events [1]. Optimal range of P2Y12 inhibition (OPR) can be considered as a therapeutic window within the risk of ST and major bleeding is the lowest after percutaneos coronary intervention (PCI).

AIM

The purpose of this study was to evaluate the effect of ticagrelor on residual platelet reactivity.

METHOD

The platelet function was assessed with Multiplate impedance aggregometry by ADP-test in 91 patients on 2 x 90 mg/d ticagrelor therapy who underwent PCI. Blood was collected at the first month after stent implantation. Adequate response to ADP receptor blocking was defined as ADP-test < 450 AU, on the base of cut-off value, determined by ROC analysis (AUC 0.864 with 0.84 specificity and 0.78 sensitivity). Low platelet reactivity was defined as ADP-test < 150 AU.

RESULTS

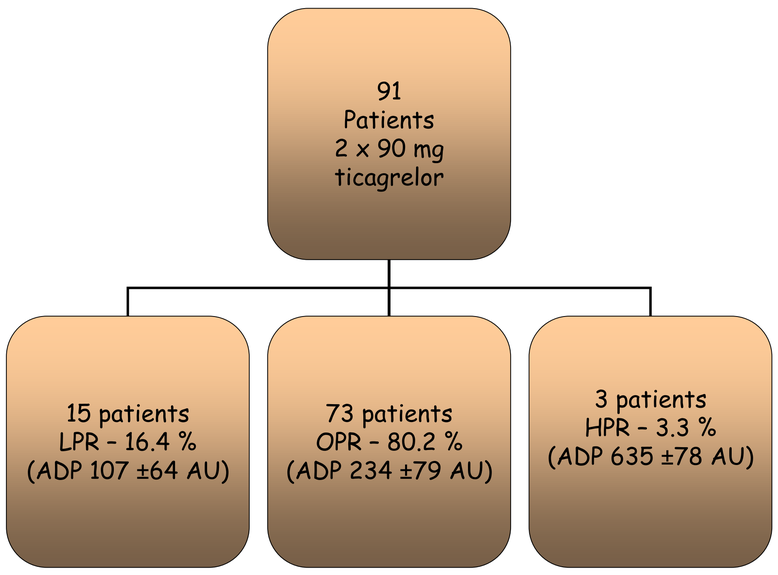
A total of 91 patients were enrolled, 73 patients showed optimal platelet reactivity (ADP 234 ±79 AU) and 15 patients were with low PR (ADP 107 ± 64 AU).

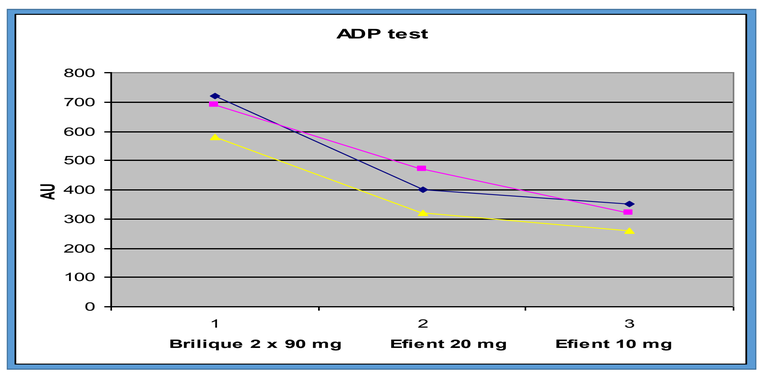
We observed residual high PR in three patients (ADP 635±78 AU) and they were switched on prasugrel 10 mg/d. Additional platelet inhibition of 52.8% was observed when switching them from ticagrelor to prasugrel (663 AU vs 313 AU).

Minor bleeding complications like cutaneos hematoma, epistaxis, haemoroidal bleeding and hemoptoe were found in patients with lower values of ADP test (107 ± 64 AU). These patients were directed by general practitioners or cardiologists to study ADP-aggregation.

Antiplatelet therapy in patients with bleeding was switched to clopidogrel 75 mg/d. Reduction of platelet inhibition and decreasing of the bleeding was seen when ticagrelor was switched to clopidogrel.

ALGORITHM OF THE STUDY:

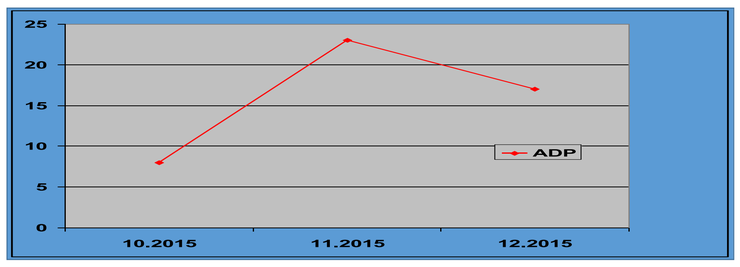




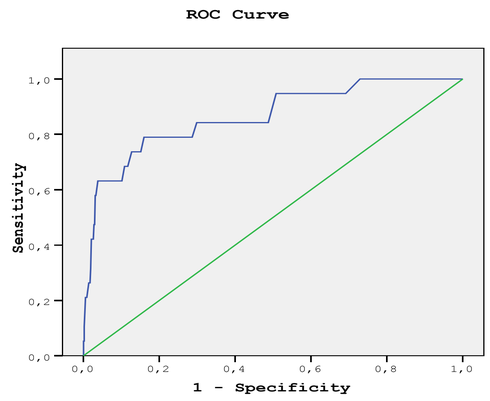
Patients with HPR swiched to prasugrel

Clinical case
70 year old man with STEMI, PCI x 2 – LAD (DES), receiving Brilique 2 x 90 mg and ASA 100 mg. One month later develops subconjunctival bleeding. Switching to clopidogrel 75 mg/d leads of platelet inhibition in therapeutic window and no bleeding events during the next months.

Period	Drug/dose	ADP test
10.2015	Brilique 2x90 mg	8 AU
11.2015	Clopidogrel 75 mg	23AU
12.2015	Clopidogrel 75 mg	17 AU



Multiple Platelet Function Analyzer



ROC analysis from study of 640 patients after PCI (AUC 0.864 with 0.84 specificity and 0.78 sensitivity).

CONCLUSIONS

We found HPR response to ticagrelor 2 x 90 mg in 3 of 91 patients (3.29%). ADP-test < 150 AU was associated with increasing risk of minor bleeding. Tailored treatment with different P2Y12 inhibitors leads to optimal level of ADP inhibition.

REFERENCES

1. **Aradi D, Kirtane A, Bonello L, et al**. Bleeding and stent thrombosis on P2Y12-inhibitors: collaborative analysis on the role of platelet reactivity for risk stratification after percutaneous coronary intervention. *Eur Heart J 2015;36:1762–1771.)*
2. **Aradi D. et all**. Working Group on Thrombosis of ESC.Expert position paper on the role of platelet function testing in patients undergoing PCI. *Eur.Heart J. 2014*

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