Abstract

Introduction: Platelets have an important role in the process of haemostasis in which they form blood clot generation. In some cases it is necessary to suppress activity of platelets by antiplatelet drugs to prevent life threatening states. Acetylsalicylic acid (ASA) and clopidogrel can influence the mechanism of primary haemostasis by inhibition of platelet function. This process has to be controlled.

Clopidogrel is used for prevention of thrombotic states. The active form of clopidogrel is formed by cytochrome P450 3A4. Clopidogrel binds to the receptor $P2Y_{12}$ instead of ADP, so platelets cannot be activated. The effect of clopidogrel is very variable. It is known that there is unresponsiveness to clopidogrel in 5–30 % patients.

Acetylsalicylic acid acetylates cyclooxygenase and blocks the conversion of arachidonic acid to tromboxan A_2, so platelets cannot be activated. ASA treatment is effective, but in some patients can appear so called aspirin resistance (AR).

Possible unresponsiveness to the therapy is the reason why it is suitable to monitor antiplatelet therapy, which may be provided by various methods.

Thesis target: To detect normal range in measurement of healthy control group, evaluate efficiency of clopidogrel and ASA and to determine which method (LTA – Light Transmission Aggregometry or MEA – Multiplate Electrode Aggregometry) is better for evaluation of platelet aggregation.

Results: Efficiency of therapy determined by platelet aggregation inhibition in a group of patients with dual antiplatelet therapy: LTA – therapy efficiency determined by aggregation inhibition after ADP induction 68 %, by percent desaggregation after ADP induction 64 %, after epinefrin (EPI) induction 80 %, after arachidonic acid (AA) induction 84 % and after cationic propylgallate (CPG) induction – CPG slope 96 % and CPG T 50 72 %. With respect to MEA, the therapy efficiency was for the ADP test 54 % and for the ASPI test 82 %.

Conlucion: Light Transmission Aggregometry and Multiplate Electrode Aggregometry are suitable for determination of ASA and clopidogrel efficiency. MEA can also be used for detection of non-compliance.

Key words: platelets – trombocytes, aggregation, ASA, clopidogrel,
agonists – inductors.