Platelets and platelet function

Anki Olsson
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Introduction


The platelet

- 2 – 5 µm
- Has no nucleus
- Lives 7 – 10 days
- 2/3 in the circulation, 1/3 in the spleen
- Reference value: 150 – 350 x 10^9/L

Platelet

Platelet adhesion

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Platelet function tests

Flow cytometry
Light Transmission Aggregometry (LTA)

Verify–now Tests
- VerifyNow PRUT–test (P2Y12 inhibition < 194 PRU)
- VerifyNow Aspirin (Therapeutic range 350–550 ARU)
- VerifyNow IIb/IIIa (≥ 95% GPIIb/IIIa inhibition if PAU is ≤ 13)

Multiplate

Multiplate activators
- ADP: ADP induced platelet activation (P2Y12-receptor)
- ASPI: Using arachidonic acid as an activator (Tp-ɑ/Tp-β-receptor)
- TRAP: Platelet stimulation via the thrombin receptor (PAR1)
- COL: Collagen induced aggregation (GPIIa-receptor)

Area Under the Curve (AUC)

Without platelet inhibition
- 100 mg AA
- 75 mg Clopidogrel
- 100 mg AA + 75 mg Clopidogrel

Aggrastat (Tirofiban)

Reference value:
- TRAP: 84 – 128 AU*Min
- ASPI: 71 – 115 AU*Min
- ADP: 57 – 113 AU*Min
Actions against platelet dysfunction

- Hypothermia should be corrected
- Continues oozing despite adequate hemostasis could require platelet transfusion
- Low fibrinogen levels should be corrected
- Desmopressin can be effective in reversing qualitative platelets defects.

Clinical use

- Prediction of diagnosis and survival in severe sepsis

- Correlation between low baseline platelet aggregation and increased postoperative bleeding

- Platelet reactivity during cardiopulmonary bypass – marked reduction followed by early restitution.

Platelet receptors

Thank you!