Platelet function monitoring for the prediction of clinical outcomes: a pooled analysis of the randomized ARCTIC and ANTARCTIC trials

**Background and Purposes:** Platelet function monitoring offers the possibility to individualize antplatelet therapy but failed to improve clinical outcomes in randomized trials. However, high-on-treatment platelet reactivity (HPR) remains a risk factor for recurrent ischemic events and low-on-treatment platelet reactivity (LPR) a risk factor for bleedings. This pooled analysis aimed to assess predictive value of PR status and treatment adjustment on risk-benefit ratio.

**Methods:** We collected data of patients randomized to the monitoring arms of the ARCTIC and ANTARCTIC trials that evaluated the PR by the VerifyNow P2Y12 test two weeks after coronary stenting.

**Results:** Among the 1,418 patients included, Optimal Platelet Reactivity (OPR) was reached in 681 patients (48.0%) as HPR was present in 269 patients (18.9%), and LPR in 468 patients (33.0%).

- **Variables**
  - **LPR PRU ≤ 85**
    - Age, median (Q1-Q3), yr: 71 (58-79)
    - Female, n (%): 121 (25.9%)
    - BMI, median (Q1-Q3): 25.8 (23.7-28.6)
    - Diabetes, n (%): 114 (24.4%)
    - Dyslipidemia, n (%): 274 (58.8%)
    - Hypertension, n (%): 278 (59.4%)
    - Current smoker, n (%): 97 (20.6%)
    - Chronic respiratory failure, n (%): 16 (3.4%)
    - Prior heart failure, n (%): 22 (4.7%)
    - Prior myocardial infarction, n (%): 113 (24.1%)
    - Prior PCI, n (%): 146 (31.2%)
    - Prior CABG, n (%): 20 (4.3%)
    - Prior perip. arterial disease, n (%): 42 (9.0%)
    - ACS presentation, n (%): 265 (56.6%)
    - Multivessel disease, n (%): 245 (52.4%)
  - **OPR PRU ≤ 208**
    - Age, median (Q1-Q3), yr: 69 (58-78)
    - Female, n (%): 145 (21.3%)
    - BMI, median (Q1-Q3): 26.4 (24.2-29.3)
    - Diabetes, n (%): 227 (33.3%)
    - Dyslipidemia, n (%): 458 (67.3%)
    - Hypertension, n (%): 464 (65.6%)
    - Current smoker, n (%): 129 (18.9%)
    - Chronic respiratory failure, n (%): 32 (4.7%)
    - Prior heart failure, n (%): 30 (4.4%)
    - Prior myocardial infarction, n (%): 185 (27.2%)
    - Prior PCI, n (%): 264 (38.8%)
    - Prior CABG, n (%): 52 (7.6%)
    - Prior perip. arterial disease, n (%): 88 (14.9%)
    - ACS presentation, n (%): 308 (45.2%)
    - Multivessel disease, n (%): 353 (51.8%)
  - **HPR PRU > 208**
    - Age, median (Q1-Q3), yr: 70 (59-76)
    - Female, n (%): 75 (27.9%)
    - BMI, median (Q1-Q3): 26.5 (24.1-29.7)
    - Diabetes, n (%): 126 (46.8%)
    - Dyslipidemia, n (%): 175 (65.1%)
    - Hypertension, n (%): 201 (74.7%)
    - Current smoker, n (%): 54 (20.1%)
    - Chronic respiratory failure, n (%): 11 (4.1%)
    - Prior heart failure, n (%): 7 (2.6%)
    - Prior myocardial infarction, n (%): 71 (26.4%)
    - Prior PCI, n (%): 118 (43.9%)
    - Prior CABG, n (%): 9 (3.3%)
    - Prior perip. arterial disease, n (%): 40 (14.9%)
    - ACS presentation, n (%): 84 (31.2%)
    - Multivessel disease, n (%): 145 (53.9%)

**Conclusion:** Less than half of patients reached an optimal platelet reactivity two weeks after stenting. The net clinical benefit did not differ according to platelet reactivity status despite a trend for more events in patients with low platelet reactivity.