

Piastrine: Biochimica e fisiologia

DETERMINANTS OF PLATELET COUNT IN A LARGE SINGLE TERTIARY CARE COHORT: IMPACT OF AGE, SEX, PLATELET REACTIVITY, CARDIOVASCULAR RISK FACTORS AND ANTIPLATELET THERAPY

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Background and Aims. Platelet count is influenced by age, sex, genetics, and ethnicity. However, the role of cardiovascular risk factors, such as smoking, hypertension, dyslipidaemia, and diabetes, in modulating platelet count remains unclear. In addition, the relationship between platelet count and platelet reactivity, responsiveness to antiplatelet therapy, including the potential role of treatment dose and duration, is still poorly defined. To the best of our knowledge, this is one of the few studies to systematically compare platelet counts in a large cohort stratified by age, sex, and clinical characteristics, thereby addressing important gaps in the current literature.

Methods. Platelet counts were collected from 10,610 patients who underwent light transmission aggregometry at the Policlinico Umberto I Hospital, and were initially analysed according to age (0-14, 15-64, 65-74, and ≥75 years) and sex. After application of inclusion and exclusion criteria, 4451 patients were included and stratified into four groups: healthy volunteers (N=506); controls (N=925), defined as patients with at least one cardiovascular risk factor; aspirin (N=2606) or clopidogrel-treated patients (N=414). Comparisons were further performed to assess differences in platelet counts in age, sex, cardiovascular risk profile, platelet reactivity, and response to antiplatelet therapy. The effects of aspirin dose (75-150 mg) and treatment duration (up to five years) were also evaluated.

Results. Platelet count showed a significant decline with age and a strong dependence on sex. In men, platelet count progressively decreased across all age groups, whereas in women the decline became more evident after the age of 65. No significant association was observed between platelet count and cardiovascular risk factors, nor with aspirin or clopidogrel therapy. Similarly, platelet count did not differ between responders and non-responders to antiplatelet therapy, except in the clopidogrel group, where non-responders exhibited higher platelet counts. Individuals with hyperreactive platelets had significantly higher platelet counts compared to those with optimal platelet reactivity. Neither aspirin dose nor treatment duration significantly influenced platelet count.

Conclusions. Platelet count is primarily determined by age and sex and appears largely independent of cardiovascular risk factors, antiplatelet therapy, treatment dose and duration. Hyper-reactive platelet phenotypes were consistently associated with higher platelet count.

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