

Determinants of Mean Platelet Volume in Rhesus Macaque

Mean platelet volume (MPV) is an estimate of average platelet size and younger platelets are larger and more reactive. This parameter has been proposed as a measure of platelet activity and predictive of acute coronary events in humans. While MPV has traditionally been viewed to differentiate between causes of thrombocytopenia, it has been found inversely related to platelet count within the normal range of platelet numbers. In addition, advancing age has been found to be associated with higher MPV values. However, in humans, advancing age is associated with higher prevalence of comorbid conditions and with polypharmacy. Since acute and chronic disease states and various medications have been found to impact MPV, the effect of age on MPV has been difficult to sort out. A non-human primates study has often been used as a useful model of aging. The objective of the study was to determine the relationship between MPV and platelet counts in non-human primates and whether age influences this potential relationship. We reviewed MPV values and platelet counts in 157 male Rhesus macaques with mean age of 184 ± 56 weeks. On univariate analysis, MPV was inversely correlated with platelet count ($r=-0.395$, $p<0.001$) and directly with age ($r=0.236$, $p<0.01$). On partial correlation analysis controlling for age, the correlation between MPV and platelet count increased to ($r=-0.458$, $p<0.001$). On multivariate analysis, MPV was independently associated with platelet count and age, and there were no interactions between the two. In conclusion, MPV is inversely related to platelet count and directly related to age in Rhesus Macaque. The mechanism by which age influences MPV merits further study.

Additional contributors to this project:

Jason Lazar

Louis Saliccioli