

Platelet-related cytokines among normal body mass index, overweight, and obese Malaysians

ABSTRACT

Background and objectives: Recent studies have reported that obesity is associated with platelet activation and systemic inflammation. Malaysia has the highest prevalence of obesity, hence, this research is performed to evaluate the development of low-grade inflammation and platelet activation, measured using soluble CD40 ligand (sCD40L) and soluble P-selectin (sP-sel), and to determine their association with obesity. In addition, we assessed the mean platelet volume (MPV) and platelet count (PLT), which are novel parameters consistently associated with obesity. **Methods and study design:** A cross-sectional study was conducted on 112 healthy men and women from 3 main ethnic group (Malay, Chinese, and Indian) who were aged 18-60 years. The participants were categorized into normal body mass index (BMI), overweight and obese groups according to WHO criteria for BMI in Asian populations ($18.5 \text{ kg/m}^2 < \text{BMI} < 35 \text{ kg/m}^2$). Waist circumference (WC) was also measured and included in the analysis. **Results:** MPV, sCD40L, and sP-sel differed significantly among the normal BMI, overweight, and obese groups ($p < 0.05$). Contrastingly, the PLT did not vary significantly among the 3 groups. In addition, sP-sel levels correlated significantly with BMI ($r=0.36$, $p=0.001$) and WC ($r=0.25$, $p=0.007$) and MPV correlated significantly with BMI ($r=0.2$, $p=0.001$) and WC ($r=0.2$, $p=0.003$). **Conclusions:** Higher MPV and sPsel levels in the obese participants than in the overweight and normal BMI participants indicated potentially higher activation of platelets in people with obesity. Moreover, we observed higher sCD40L levels in obese participants than in the overweight and normal BMI participants, suggesting a proinflammatory state in obese individuals.

Keyword: Body mass index; Soluble CD40 ligand; Mean platelet volume; Soluble P-selectin; Waist circumference