

Serum interleukin-6 and mean platelet volume in pediatric pneumonia

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Abstract

Background In pneumonia, interleukin (IL)-6 is released in response to inflammation. Interleukin-6 stimulates megakaryocyte maturation, leading to larger platelets being released into the circulation. Platelet size is measured as mean platelet volume (MPV). The MPV may also be affected by nutritional status and smoking.

Objective To assess for a possible relationship between serum IL-6 concentration and MPV, including smoking and nutritional status as confounding factors, in children with pneumonia.

Methods An analytic, observational study with cross-sectional design and consecutive sampling of children aged 2 to 59 months with a clinical diagnosis of pneumonia was conducted from November 2013 to March 2014 in Dr. Hasan Sadikin General Hospital and two network hospitals. All patients underwent routine complete blood counts including MPV and measurement of serum IL-6 concentration using an enzyme-linked immunosorbent assay (ELISA) technique. Regression linear analysis was used to assess the relationship between MPV and IL-6, passive smoking, and nutritional status.

Results There were 67 patients enrolled in the study. Subjects' mean serum IL-6 concentration was 49.3 (SD 78.3) pg/mL, and mean MPV was 9.2 (SD 0.9) fL. The regression model for MPV was $7.531 + 0.662 (\text{passive smoking}) + 0.276 (\text{weight per age}) + 0.009 (\text{IL-6})$.

Conclusion There was a relationship between IL-6 serum concentration and MPV in children with pneumonia. [Paediatr Indones. 2016;56:57-61.].

Keywords: pneumonia, interleukin-6, mean platelet volume, children

Pneumonia is the leading, global cause of death in children under 5 years of age. More than 80% of deaths occur in low- and middle-income countries, and more than half of the deaths occur in just 6 countries: India, China, Pakistan, Bangladesh, Nigeria, and Indonesia.¹ According to the 2012 Indonesian Health and Demographic Survey, pneumonia is the leading cause of mortality in children under 5 years of age in Indonesia.² Pneumonia can be broadly defined as inflammation of lung tissue caused by an infectious agent that stimulates a response resulting in damaged lung tissue.³ In pneumonia, pro- and anti-inflammatory cytokines are released in response to inflammation. In severe pneumonia, the cytokine response is not only found in the affected lung, but also in the circulation. In pneumonia patients, increased cytokines in the circulation are related to disease severity,^{4,5} and higher cytokine release into the circulation is indicative of a higher the risk of mortality. Previous studies have shown that only interleukin (IL)-6, among many

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