Activation of the acute phase response (OPR) by intestinal helminthiasis and iron status of school children between 8-11 year old in Tanjung Priok, North Jakarta

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ABSTRACT
The study was conducted to investigate whether the intestinal helminthiasis influence the acute phase response (APR), nutritional status and iron status, and the impact of anthelminthic treatment on the APR and iron status among school children 8 - 11 years old in SD 01 and 02 Papanggo, Tanjung Priok, North Jakarta. The prevalence of helminthiasis among these children was regarding to Ascaris lumbricoides 81.6 %, T richuris Trichiura 88.3 % and mixed infection A.lumbricoides and T : trichiura 70 %. Of 120 children enrolled in this study, 59 children received a single 400 mg dose Albendazole, 61 children received placebo.

The design of this study was a cross sectional association study combined with a randomized, doubly-masked, community intervention trial. At the beginning of the study, anthropometric measurements were taken. In addition, stool samples, plasma iron, hemoglobin, C-reactive protein (CRP), White Blood Cell (WBC), Erythrocyte Sedimentation Rate (ESR), Interleukin-1 (IL-I), Interleuldn-6 (IL-6) and Tumor Necrosis Factor (TNF) concentrations were determined prior to the interventions and 10 days after.

The children with Z-score of WFA, WFH and FIFA less than -2 were 24,2 %, 6,7 % and 19.2 %, respectively. Of 30 % of the subjects were anemic (Hb <12 g /dl) and 21.6 % had plasma iron levels below normal (male < 59 µg/dl, female < 37µg/dl).

CRP,IL-1,IL-6 and TNF showed normal values in both groups before and 10 days after treatment. ESR was significantly increased in both groups 10 days after treatment. Within group increases in WBC count was significant only in the treatment group.

Plasma iron concentration was significantly increased in the treatment group (P = < 0.05) whereas it was significantly decreased in the placebo group (P = < 0.05). Increases in hemoglobin level in the treatment group and the decrease in the control group were no statistically significant.

This study concluded that the APR were normal during the intestinal helminthiasis and the intensity of infection were not proportional with the APR level, The helminth treatment with single 400 mg dose of Albendazole has not only a significant effect on decreasing worm burden but also a rise in plasma iron.