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Production of proinflammatory cytokines: granulocyte-macrophage colony stimulating factor, interleukin-8 and interleukin-6 by peripheral blood mononuclear cells of protein energy malnourished children

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Protein-energy malnutrition (PEM) is a serious disease responsible for the high morbidity and mortality rates among children in developing countries. The damaging effects of PEM on their immune system may persist for long throughout their lives. In this study, the levels of the proinflammatory cytokines; Granulocyte-Macrophage colony stimulating factor (GM-CSF), interleukin-8 (IL-8) and interleukin-6 (IL-6) were measured in culture supernates of peripheral blood mononuclear cells (PBMCs) isolated from 46 PEM children before and after stimulation with lipopolysaccharide (LPS). The PEM children were classified into four groups; under weight (u.wt= 15), marasmus (M= 11), marasmic kwashiorkor (MK=10), and kwashiorkor (K=10). Results were compared with those of a control group composed of ten healthy well-nourished age-matching children (C=10). Before LPS stimulation, GM-CSF levels of M, MK and K groups were lower than those of the control group, while IL-8 and IL-6 levels were higher in all PEM groups than in the controls. After LPS stimulation, GM-CSF, IL-8 and IL-6 levels were lower in all PEM groups than controls. The three cytokines' levels were elevated in control and PEM groups after LPS stimulation than before. Before and after LPS stimulation, the highest level of the GM-CSF, IL-8 and IL-6 within PEM children were detected in the u.wt group followed by M, MK and K groups respectively. The disturbance in the production of GM-CSF, IL-8 and IL-6 by PBMCs of PEM children under study and the decreased stimulatory responses of these cells denoted to severely impaired inflammatory response associated with PEM status in addition to several immunological processes in which these cytokines are involved.