

Secretory and Serum IgA in Protein—Calorie Malnutrition

Principal Investigators: Stitaya Sirisingha, D.D.S., Ph.D.¹
 Robert Suskind, M.D.²
 Robert Edelman, LTC, MC

Associate Investigators: C. Asvapaka¹
 Robert E. Olson, M.D.²

BACKGROUND: Malnourished children suffer from an increased incidence and severity of infections. We have previously demonstrated an impairment of the cell-mediated immune function, of the inflammatory response, and of complement and C3-activating systems in children with protein-calorie malnutrition (PCM) (See this year's Annual Report).

Because children suffering PCM are prone to infection at the body surfaces, the local immune system was investigated in these children.

RESULTS: As shown in Figure 1, the total nasal-wash protein concentrations in untreated PCM patients and well-nourished Thai children were similar, as were nasal-wash IgG and albumin levels. By contrast, the level of secretory IgA, expressed as percent of nasal wash protein, was significantly lower than that of control children ($P < .01$). The deficiency in secretory IgA failed to respond after 70 days of treatment with 175 calories and 4 gm protein per kilogram per day. There was significant improvement in other immune functions after this same dietary treatment. Late convalescent nasal washes are being examined now in order to determine how long the secretory IgA defect persists. Children with kwashiorkor and with marasmus were equally deficient in secretory IgA.

In contrast to secretory IgA, serum IgA concentrations were markedly elevated at the time of hospital admission in PCM patients. The mean serum IgA concentration, however, decreased to the control level after dietary treatment.

The results suggest that (1) the systemic and the local IgA systems respond differently to dietary treatment of PCM and (2) the apparent deficiency of secretory IgA found in severe PCM could relate to the clinical observations that malnourished children seem prone to develop mucosal infections.

¹ Department of Microbiology, Faculty of Science, Mahidol University, Bangkok, Thailand

² Anemia and Malnutrition Research Center, Chiangmai, Thailand and Departments of Pediatrics and Biochemistry, St. Louis University, USA

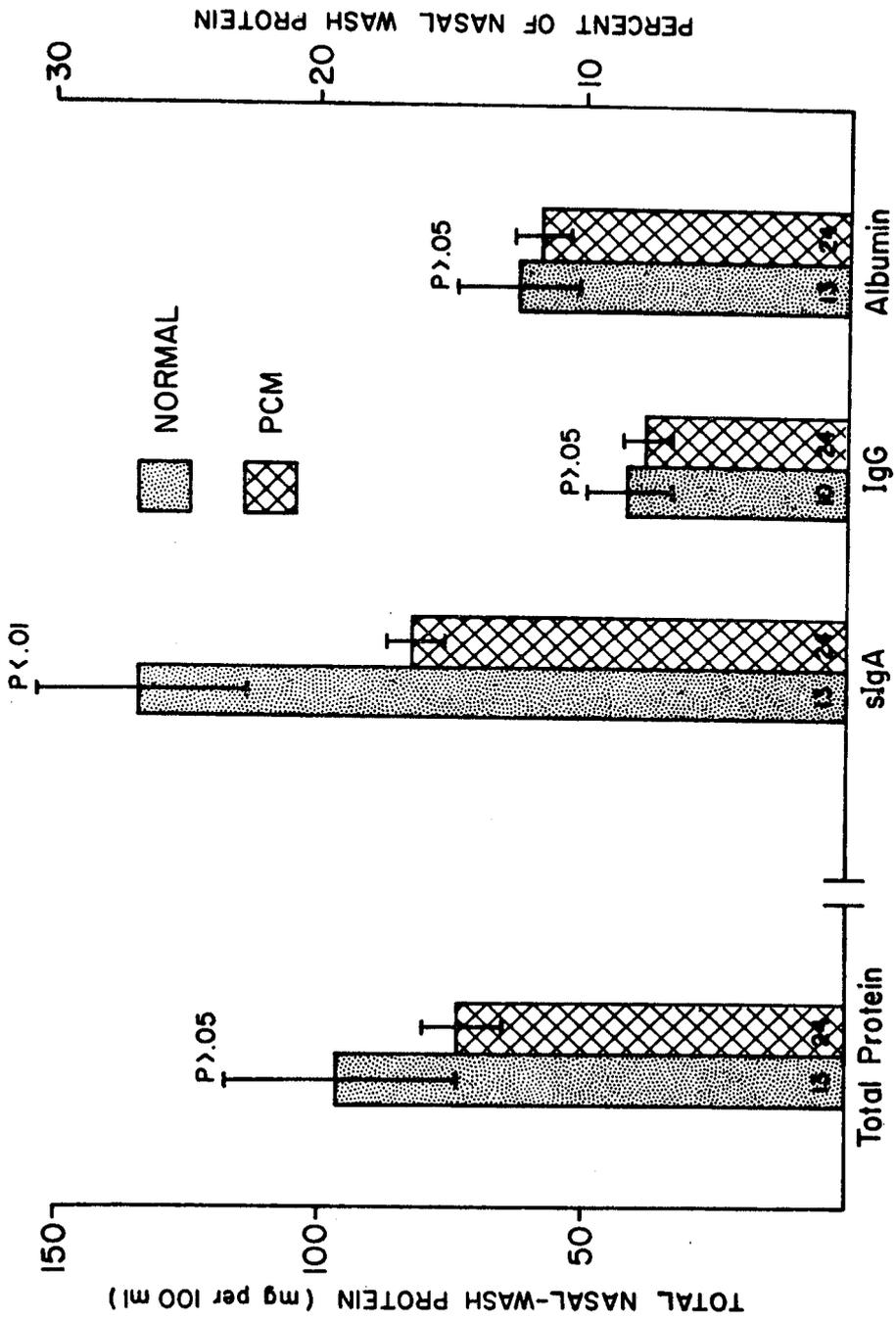


Figure 1. Comparison of Nasal-Wash Protein Content of Well-Nourished and Protein-Calorie Malnourished Children. The mean values \pm one S.D. are indicated by the bars. The number of patients studied and probability levels are shown.