The specific patterns of adherence to HEp-2 cells in the Tanzanian study differed from those seen in Zambian adults with HIV infection and diarrhea in our study [2]. It may not be appropriate to compare HIV-infected children in Tanzania with HIV-infected adults in Zambia. Our patients all had advanced AIDS. Even organisms with ordinarily low virulence may be pathogenic in such a population. The children in Tanzania may have differed in their state of immunosuppression.

Adherence to HEp-2 tissue culture cells selects for a heterogeneous group of E. coli strains that have been associated with diarrhea in several settings. Different adherence patterns have been used to suggest differences in pathogenicity, but the biologic significance of the different adherence patterns of E. coli strains is not known. A number of studies have not found relationships between particular HEp-2 cell patterns and illness [3–6]. Adherence patterns also are assay-dependent phenomena [7]. Localized adherence among enteropathogenic E. coli (EPEC) has been associated with illness among children [8], but localized adherence excluding EPEC strains is not always associated with illness [6]. The majority of studies have not found an association between strains with diffuse adherence to HEp-2 cells and diarrhea [3–5]. Aggregatively adherent strains have been incriminated most strongly in cases of persistent diarrhea (>14 days) in children in developing countries [3]. It may be that this group of organisms in children relates more to persistent diarrhea than to HIV positivity. Certain adherent E. coli of normally low virulence in competent hosts may be pathogenic in HIV-infected patients who have severe suppression of their immune systems.

In the report by Cegielski et al. [1], HEp-2 cell adherence without regard to patterns was associated with diarrhea in Tanzanian children. Their findings and ours in Zambian adults with HIV-associated diarrhea suggest that HEp-2 adherent strains may be important etiologic agents of diarrhea in this setting. Further studies are needed to help elucidate the role of these strains in HIV-associated diarrhea.

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References

Impaired Th1-like Immune Response in Schistosoma mansoni Infection

To the Editor—Recently Sabin et al. [1] reported impaired T cell functional responses to tetanus toxoid in humans with Schistosoma mansoni infection compared with uninfected controls. Reduced interferon-γ (IFN-γ) production from stimulated peripheral blood mononuclear cells (PBMC) in patients was associated with disease activity. Because interleukin-4 (IL-4) production was still inducible in these patients, the authors concluded that there is a specific impairment of Th1-like immune response in patients with infection. Such data have been generated in vitro, and in our view, they do not fully support the conclusion reached by Sabin et al. [1].

In schistosomiasis, increased blood levels of IFN-γ and neopterin in patients correlate with disease activity [2, 3], as such increases are indicative of a Th1-like immune response [4]. This contrasts with the reduced in vitro capacity of PBMC to respond to antigenic stimulation. It appears that reduced in vitro responsiveness is related to the degree of activation of the same cells in vivo, and PBMC from schistosomiasis patients seem to be exhausted by chronic challenge and exposure to cytokines in vivo.

Such a condition is not unique to S. mansoni infection. Increased neopterin and IFN-γ concentrations are common in a variety of diseases, such as infections with viruses, including human immunodeficiency virus (HIV), or parasites, autoimmune disorders, and some malignancies [5]. In these situations, impairment of the immune system to compete with secondary antigens is common, and one hallmark of lost functional T cell response is a reduced capacity to produce IFN-γ upon stimulation in vitro. In HIV infection, the loss of T cell proliferative responses is inversely related to serum neopterin concentrations [6] and HLA-DR expression on CD4 cells [7]; thus, reduced proliferative response is associated with the degree of activation of Th1-type cells in vivo. Of interest, in HIV infection and in systemic lupus erythematosus, functional response of T cells is normal when cells are allowed to rest in vitro before being stimulated [7, 8]. Such results compare well with basic in vitro data: Freshly isolated PBMC from healthy persons respond well to antigenic stimulation but cannot be driven to a secondary response unless cells are allowed to rest for a few days.

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0022-1899/96/7403–0047$01.00
Thus, from the data of Sabin et al. [1], one may conclude that the Th1-like immune response that is strongly primarily activated in patients explains the lack of response of the same cells to secondary stimulation in vitro and in patients. A higher rate of spontaneous apoptosis in the activated population of T cells may explain the reduced expansion of clones in vitro. Consequently, a normal Th2-like response in vitro in S. mansoni infection may simply indicate that this subpopulation is not stimulated in patients. Therefore, it would be interesting to compare the relative increases of IL-4 and IFN-γ levels with those in patients and with normal levels.

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**References**


**ERRATUM**

There is an error in the August issue of *JID* (Tynell E, Aurelius E, Brandell A, et al. Acyclovir and prednisolone treatment of acute infectious mononucleosis: a multicenter, double-blind, placebo-controlled study. J Infect Dis 1996;174:324–31). In the third paragraph of the Introduction, the second sentence said ‘Patients with IM . . . were treated with acyclovir and prednisolone or acyclovir and placebo for 10 days.’ Instead, the sentence should read as follows: Patients with IM, who had been ill ≤ 7 days, were treated with a combination of either acyclovir and prednisolone or placebo and placebo for 10 days.