

specializes in oncology, rheumatic diseases, immunodeficiency diseases, and chronic pulmonary diseases, there were no exposures to AIDS before or during the time of the study.

Thirty-four full-time staff members were studied (10 men and 24 women); 13 were physicians, 13 nurses, 4 laboratory technicians, and 4 allied health professionals. Ages ranged from 22 to 65 years (mean $\pm$ S.D., 36 ± 10). Peripheral-blood mononuclear cells were isolated by Ficoll-Hypaque gradient density centrifugation. Total T cells, helper T cells, and suppressor T cells were identified with fluorescein isothiocyanate-conjugated monoclonal antibodies Leu-4, Leu-3a, and Leu-2a (Becton Dickinson, Mountain View, Calif.), respectively. The earliest determinations were made visually with a fluorescence microscope, but most samples were analyzed on a fluorescence-activated cell sorter (FACS IV, Becton Dickinson) interfaced with a Consort 440 computer system.

On initial screening, 7 of the 34 subjects had helper-suppressor T-cell ratios of 0.9 or less, and 4 of the 34 had ratios under 0.85. The mean ratio ($\pm$ S.D.) was 1.7 ± 0.69 . (In a "normal" group of 8715 blood donors in our area,¹⁰ the mean ratio was 2.0 ± 0.7 , and only 1.9 per cent had values under 0.85.) Of the seven subjects with values of 0.9 or less, six were physicians, and one was a laboratory technician; five were male, and two female; and four were under 35 years of age, and three were over 35. Persons working in each of the pediatric subspecialties were represented. A decrease in helper cells to less than 600 per cubic millimeter was observed in one subject, and an increase in suppressor cells to more than 600 per cubic millimeter was observed in four subjects. Only one subject had absolute lymphopenia at the time of study.

Four subjects with initial ratios under 0.85 have undergone repeated studies over periods ranging from 5 to 30 months. In all four, values have reverted to more than 1.2 after periods of several months; one subject had a cyclic second drop and rise with a periodicity of one year. None have had any evidence of immune deficiency.

Pediatricians in particular and hospital staff in general are probably exposed to more infectious illnesses than a general population, and infections can cause reversed helper-suppressor T-cell ratios.¹¹ However, the reduced ratios persisted in these pediatric staff members for longer periods than those previously reported. This suggests that more persistent immunologic stimuli,¹¹ perhaps related to the specific chronic diseases dealt with, may have been involved in the altered ratios.

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1. Gottlieb MS, Schreff R, Schanker HM, et al. *Pneumocystis carinii* pneumonia and mucosal candidiasis in previously healthy homosexual men: evidence of a new acquired cellular immunodeficiency. *N Engl J Med* 1981; 305:1425-31.
2. Vieira J, Frank E, Spira TJ, Landesman SH. Acquired immune deficiency in Haitians: opportunistic infections in previously healthy Haitian immigrants. *N Engl J Med* 1983; 308:125-9.
3. Curran JW, Lawrence DN, Jaffe H, et al. Acquired immunodeficiency syndrome (AIDS) associated with transfusions. *N Engl J Med* 1984; 310:69-75.
4. Komfeld H, Siouwe RAV, Lange M, Reddy MM, Grieco MH. T-lymphocyte subpopulations in homosexual men. *N Engl J Med* 1982; 307:729-31.
5. Pinching AJ, McManus TJ, Jeffries DJ, et al. Studies of cellular immunity in male homosexuals in London. *Lancet* 1983; 2:126-30.
6. Luban NL, Kelleher JF Jr, Reaman GH. Altered distribution of T-lymphocyte subpopulations in children and adolescents with hemophilia. *Lancet* 1983; 1:503-5.
7. Landay AL, Pixin MC, Aha T, Stagno S, Lurie A, Cruper MD. Immunologic studies in asymptomatic hemophilia patients. *J Clin Invest* 1983; 71:1504-4.
8. Lifson JD, Finch SL, Susaki DT, Engelman EG. Variables affecting T-lymphocyte subsets in a volunteer blood-donor population. *Clin Immunol Immunopathol* (in press).
9. De Waele M, Thielemans C, Van Camp BKG. Characterization of immunoregulatory T cells in EBV-induced infectious mononucleosis by monoclonal antibodies. *N Engl J Med* 1981; 304:464-2.

ABNORMAL HELPER/SUPPRESSOR T-CELL RATIO IN THE STAFF OF A PEDIATRIC HOSPITAL

To the Editor: An inverted ratio of helper to suppressor T cells due to decreased numbers of helper T cells is found in patients with AIDS^{1,2} and in healthy but high-risk populations.³⁻⁵ The ratio itself has been used as a diagnostic aid. We have found a reversed helper-suppressor T-cell ratio with an unexpectedly high frequency among healthy staff members of a pediatric chronic disease hospital. Nine of those studied were in a high-risk group. Although the hospital