Recent Advances in Serodiagnosis of Pneumocystis Carinii

To the Editor:

Several points in Dr. Hughes’ response to my communication (Chest 1985; 87:698-700) concerning the serodiagnosis of Pneumocystis carinii require clarification.

First, the blinded study by Meyers et al referenced in both letters did not include giemsa stains of lung tissue sections or “touch preps.” This is highly significant because the Seattle investigators did not look for trophozoites of P carinii, but rather stained for the cyst phase only. According to Hughes et al, as well as others experienced in tinctorial techniques applied to P carinii, it is recommended that stains capable of detecting all stages of the life cycle be employed in examining these specimens to prevent false-negative biopsy results. In the absence of these critical data, we cannot positively exclude the existence of subclinical infection in the intensely immunocompromised patients in Meyers et al’s report. Studies in the animal model have suggested that subclinical infection with P carinii may be characterized by a paucity of cyst phase organisms and a predominance of trophozoites.

Secondly, all of the viral and idiopathic pneumonia patients were acutely immunocompromised marrow transplant recipients who received treatment in 1977-79 without benefit of trimethoprim-sulfamethoxazole (TMP-SMX) prophylaxis. At that time, the incidence of acute PCP in that population was substantially higher than it is today. That the incidence of P carinii antigenemia was high should surprise no one. Eighty to ninety percent of normal children have IgG antibody to P carinii by age 4, they are seen post mortem in about 3.3 percent of unselected adults, in 13.3 percent of asymptomatic pediatric cancer patients and in nearly 70 percent of newly-diagnosed AIDS patients. Both histologic and serologic evidence clearly points to the ubiquity of P carinii. There is small wonder that intensely immunocompromised marrow recipients without benefit of TMP-SMX prophylaxis exhibited P carinii antigenemia. Acute PCP has been eliminated at St. Jude Children’s Research Hospital only by routine TMP-SMX prophylaxis.

Concerning the diagnostic utility of P carinii antigen tests, our group has stated on numerous occasions that clearly not all antigen-positive patients require treatment. No laboratory test result should be taken out of context. All data should be reviewed in proper perspective with the patient’s history, risk factors, clinical presentation and other information. As long as P carinii can be found in healthy individuals and in an increased percentage of compromised patients, the phenomenon of antigenemia will be observed. This is not a defect in the antigen test, but rather is a reflection of the opportunistic nature of P carinii infection. It is up to the clinician to view all findings in perspective and to use antigen data to the patient’s benefit. Confusion is largely eliminated when the clinician exercises sound judgement in concert with established facts about P carinii and all available data concerning the patient in question. An algorithm designed to aid in these decisions is available.

The CIE tests developed by the Centers for Disease Control and by Dr. Hughes for P carinii antigenemia bear only a slight resemblance to the one developed and improved in our laboratories. Antisera used in their tests were not prepared from cell culture–grown P carinii organisms. At the CDC’s invitation, we tested their antisera and determined that it was only minimally reactive in the CIE test when electrophoresed in parallel with our own antisera. Preparation of highest quality antisera is difficult, however, and this most likely explains our differing results.

Discussion concerning the usefulness of P carinii antigen tests may be finally resolved to everyone’s satisfaction by our recent report and forthcoming manuscript describing a new quantitative latex particle agglutination test for P carinii antigen. The test detected antigenemia in coded specimens as early as two months before the onset of acute PCP in compromised patients, and antigen titers have been shown to correlate well with clinical progress or lack thereof. Thus, quantitative antigen titers should provide the clinical physician with much more substantial evidence of the existence or development of PCP in the at-risk patient.

With support by the National Cancer Institute, our group serves as a national serologic reference laboratory for P carinii infections in AIDS, cancer and other immunocompromised patients. We presently perform the quantitative latex particle agglutination test for P carinii antigen and an enzyme-linked immunosorbent assay for IgG antibody to P carinii at no charge for any referring physician in the US and Canada. The submission of fresh, coded sera collected prior to the initiation of therapy for PCP is invited. The submission of coded sera and the results therefrom should settle the question concerning the utility of P carinii antigen tests on the basis of hard data rather than opinion.

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