S. pneumoniae. was performed by using serotype-specific antisera

S. pneumoniae

was a leading cause of community-acquired pneumonia in the United States [1]. Alcoholics are at increased risk of pneumonia and sepsis secondary to S. pneumoniae. The Advisory Committee on Immunization Practices (ACIP) recommends pneumococcal polysaccharide vaccine for all alcoholics. Although most studies have shown this vaccine to be efficacious in preventing infections, the efficacy has varied from 34% to 70% in prospective and case-control studies of U.S. populations [2]. Alaska Natives have a high rate of invasive infection due to S. pneumoniae. Herein we report a fatal case of sepsis due to S. pneumoniae serotype 4 in an Alaska Native female patient with alcoholism who had received the 23-valent pneumococcal vaccine during a study 6 years earlier, but who did not demonstrate a rise in type 4 serotype specific IgG antibodies after vaccination.

The patient had been participating in a prospective case-control study of alcoholics and nonalcoholics designed to (1) determine the immunogenicity of 23-valent pneumococcal vaccine after primary immunization in participants, (2) monitor serotype-specific antibody levels annually for 6 years, and (3) determine the immunogenicity after a booster dose 6 years after primary immunization [3]. Serotype-specific antibody levels to six serotypes (1, 4, 6B, 12F, 14, and 23F) were tested annually. Testing was performed by use of an antibody capture EIA that was developed and standardized at the Arctic Investigations Program (AIP), National Centers for Infectious Diseases (NCID), Centers for Disease Control and Prevention (CDC) in Anchorage, Alaska [4]. Serotyping of S. pneumoniae was performed by using serotype-specific antisera via the Quelling reaction at the Division of Bacterial and Mycotic Diseases, NCID, CDC in Atlanta. Antibiotic susceptibility testing was performed at the AIP by using the agar dilution method [5].

A 31-year-old Alaska Native alcoholic female presented to the hospital for evaluation of a 4-day history of fever, productive cough, and right pleuritic chest pain. The patient had been drinking alcohol heavily until 2 days before admission. At her initial physical examination she was alert and oriented. Her temperature was 101°F, she had tachycardia, and she had decreased breath sounds in the right lower lobe. Otherwise, the examination findings were unremarkable. Her WBC count was 8,000/mm³ with 40% band forms. Chest radiography showed a right-lower-lobe consolidation. She was treated with iv cefotaxime and clindamycin, iv fluids, and oxygen. On the second hospital day, her mental status deteriorated and she developed respiratory distress. Chest radiography was compatible with adult respiratory distress syndrome as well as right-lower-lobe pneumonia, and she was intubated and mechanical ventilation was instituted. Her initial blood culture yielded S. pneumoniae that was susceptible to both penicillin and cefotaxime (MIC of <0.03 for both antibiotics). Her hospital course was complicated by progressive hypoxia, despite 100% oxygen and pressure support; recurrent pneumothorax requiring chest-tube placements; bradycardia; and finally death on the 13th hospital day. Typing of the S. pneumoniae isolate recovered from blood showed it to be type 4.

Serum specimens were available 6 months before and on the day of vaccination, as well as 10, 17, 19, 35, and 43 months postvaccination (figure 1). Sera were also available on the day of admission, the fifth hospital day, and the day of death. Antibody levels to six serotypes, including type 4 showed no significant rise 10 months after vaccination. The level of type 4 antibodies was <4 μg/mL 10 months after vaccination and, along with antibodies to the other 5 serotypes, fell progressively during the next 57 months.

Pneumococcal polysaccharide vaccine is currently recommended for all persons >65 years of age and for persons with chronic illnesses including alcoholism [1]. A meta-analysis of prospective trials has concluded that the vaccine appears to be efficacious in reducing bacteremic pneumonia in low-risk adults, but that it fails to demonstrate efficacy in high-risk patients [6]. In a case-control study on the immunogenicity of pneumococcal vaccine in Alaska Natives who are alcoholics, and Native and non-Native nonalcoholics, we found that alcoholics generally responded adequately to this vaccine as did nonalcoholic controls [3]. However, the magnitude of response was greater among nonalcoholics and significant for 2 serotypes (3 and 19F). In addition, we found wide variation from patient to patient in response to specific serotypes. Even for most healthy patients, response to vaccine of one or more serotypes was poor. Thus, while this vaccine likely has an efficacy of >50% for preventing bacteremic S. pneumoniae, individual failures resulting in invasive disease may be related to a previous inadequate vaccine response to the particular serotype responsible for the infection.

For the patient we described, who had fatal bacteremia secondary to serotype 4, her serotype 4 specific antibody level failed to increase after vaccination, and at the time of infection, she had extremely low levels of serotype 4 specific antibody. Results of a prospective trial of pneumococcal vaccine in U.S. veterans, which failed to demonstrate efficacy, indicated that most vaccine recipients with pneumococcal infections did not respond, or sustain antibodies, to antigens that subsequently caused their infections [7].

Recently, an emergence of drug-resistant strains of S. pneumoniae have been isolated in the United States and elsewhere [8]. It is hoped that a newer protein conjugate pneumococcal vaccine will offer better immunogenicity and efficacy against invasive S. pneumoniae disease.

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Figure 1. Pre- and post-pneumococcal vaccine antibody levels to serotypes (1 = ■, 4 = □, 6B = ○, 12F = ▼, 14 = ●, and 23F = △) measured by EIA in an Alaska Native female with alcoholism. The patient received the 23-valent pneumococcal vaccine on 12 June 1997. The patient was admitted for sepsis on 15 March 1993, and *Streptococcus pneumoniae* serotype 4 was isolated from blood. The patient died on 28 March 1993.

References


**Pneumocystis carinii Pneumonia Mimicking Wegener’s Granulomatosis**

Wegener’s granulomatosis is frequently associated with a positive cytoplasmic antineutrophil cytoplasmic antibody (c-ANCA), vasculitis, and cavitary lung disease. We describe a case of *Pneumocystis carinii* pneumonia (PCP) in a patient who presented with signs and symptoms typical of Wegener’s granulomatosis. This case illustrates vividly the protein manifestations of HIV disease, and emphasizes the importance of antigen-specific confirmation tests for c-ANCA.

A 36-year-old heterosexual man was referred to the hospital (Cardiff, Wales) for investigation of a 10-kg weight loss and a rash. He was a nonsmoker. Physical examination revealed numerous painless, punched-out ulcers, 5-mm in diameter, on his left lower leg and right forearm. He was apyrexial. Laboratory investigations revealed normochromic normocytic anemia and normal WBC and platelet counts, as well as an erythrocyte sedimentation rate of 55 mm/h. A CT scan of the thorax demonstrated a cavitating lesion (figure 1). Serology for c-ANCA was positive. Histopathologic evaluation of a biopsy specimen of the rash showed capillary vasculitis. A bronchoscopy was normal;