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Tuberculosis Outbreak in Savoonga

The identification of an adult tuberculin converter in April 1990 and of a child in June 1990 with symptoms of tuberculosis led to a series of contact investigations in Savoonga (St. Lawrence Island) beginning in mid-June. These investigations resulted in the discovery of an outbreak of pulmonary tuberculosis (PTB) among the villagers.

The first patient was a 6-year-old girl admitted to the Alaska Native Medical Center (ANMC) on June 8 with a 6-month history of poor weight gain, arthralgias, fever, and erythema nodosum. She was found to be a tuberculin converter (PPD=20 mm on 6/6/90; Mono-Vacc reaction=00 mm in 8/89), and a chest x-ray showed a left lower lobe infiltrate with hilar adenopathy. Three-drug anti-tuberculous therapy was started on June 12. Mycobacterial cultures of sputum, gastric aspirate, and urine yielded no growth. A contact investigation conducted during late June failed to identify the child's source of infection.

The second patient was an asymptomatic, pregnant, 20-year-old woman who had had a "strongly positive" PPD reaction in early April 1990 (she had had a negative skin test in 1988). She delivered a healthy, full-term infant at ANMC on April 19. A chest x-ray after delivery was interpreted as normal. She began treatment with isoniazid and rifampin on April 20; her infant son was treated with isoniazid 50 mg daily. On July 5 it was reported that a sputum culture obtained from the patient in April had yielded a single colony of *M. tuberculosis* sensitive to isoniazid, rifampin, and ethambutol.

Three additional cases were confirmed by culture in July and August. Two had been diagnosed and treated for tuberculosis in 1959 and 1977, respectively. Sputum smears from one patient showed 4+ acid-fast bacilli (AFB), suggesting that he was highly infectious; he reported having had a non-productive cough for two years. One patient was diagnosed as a result of evaluation of respiratory symptoms while he was incarcerated at Anvil Mountain Correctional Center (AMCC) in Nome; his sputum AFB smears were negative.

Tuberculin screening of school children and an intensive contact investigation were conducted in Savoonga in August and September. Sixty-nine Savoonga residents underwent portable chest x-ray examinations on September 17-18. These efforts resulted in the confirmation of four more cases in October and three cases in November. In addition, a second Savoonga resident at AMCC was diagnosed in October as having PTB. His sputum smears showed 3+ AFB, and chest x-ray showed a cavitary infiltrate.

Contact investigations identified 14 tuberculin converters ranging in age from one to 31 years (mean, 13 years). In addition, 37 close contacts of the PTB cases were either heavily-exposed, previously-identified tuberculin reactors or had newly positive PPD reactions (the most recent testing for many adults had been in 1980, so it was unclear when they had been infected). Isoniazid preventive therapy was prescribed for all 51 tuberculin converters and contacts-reactors.

In summary, thirteen cases of PTB were diagnosed among Savoonga residents between June 1 and November 15, 1990. All but one of the cases were confirmed by culture. Case-patients ranged in age from 6 to 35 years (mean, 28.3 years); twelve were adults. Seven (58%) of the cases were male.

Nine of the cases were identified by means of contact investigations conducted in Savoonga. Two other persons had respiratory symptoms during incarceration at AMCC in Nome; appropriate evaluation resulted in their being diagnosed as having PTB.

Two case-patients had concentrated sputum smears showing numerous AFB. One of these patients was not listed as a contact of any tuberculin converter or another tuberculosis case-patient. Nevertheless, both may have been sources of infection in Savoonga.

All Savoonga PTB patients are receiving multi-drug anti-tuberculous therapy under close supervision or under direct observation. Surveillance for other symptomatic persons is continuing. A second tuberculin screening of school children will be conducted in January 1991.

COMMENT

Outbreaks of tuberculosis occur sporadically in Alaska among persons closely exposed--usually in the home or workplace--to another individual with PTB. The number of persons infected depends on the index case's degree of infectiousness (smear-positive cases are more likely to be infectious than smear-negative ones) and on duration and intensity of exposure. Epidemiologic investigations are an effective way of identifying routes of TB transmission and preventing further spread of the disease.

Symptoms of PTB may be indistinguishable from those of other respiratory illnesses. Health care providers should consider PTB in their differential diagnosis of persistent respiratory symptoms--particularly in Alaska Natives, Asians and Pacific Islanders, HIV-infected persons, and the homeless.

All persons with TB disease or *M. tuberculosis* infection must be appropriately and fully treated. The TB Control Program can provide consultation about TB treatment, will dispense anti-TB medications free of charge, and will arrange for treatment of TB patients under direct observation to assure compliance with recommended therapy.

We request that health care providers report promptly all suspected or confirmed TB cases to the Section of Epidemiology at 561-4406.

(Contributed by Michael Jones, MD, Section of Epidemiology.)