



## **TUBERCULOSIS OUTBREAK AT THE LOS ANGELES COUNTY CORONER'S OFFICE, 1995**

Transmission of tuberculosis (TB) from cadavers to pathologists during autopsy has been reported, but the risk for TB infection among autopsy room workers is not well described. Between April and August 1995, two active cases of TB and 10 tuberculin skin test (TST) conversions occurred among 184 employees of the Los Angeles County Coroner's Office. An investigation was conducted to assess the extent, source, and risk of TB transmission, to evaluate the employee screening program, and to offer recommendations to prevent further TB infections.

### **METHODS**

A positive tuberculin skin test (TST) was an induration of 5 mm or more for known contacts to TB and of 10 mm or more for other employees; a TST conversion was an increase in induration size of 10 mm or more. The conversion date was the day of the first positive TST. Medical charts and records of the cases and recent converters were reviewed confirming all TST results through either the medical record or the provider. The County TB registry was matched with the employee roster. Cadavers autopsied at the coroner's office between June 1994 and June 1995 that could have been infectious for TB were identified through death certificates and through the log book of requests for AFB stains on necropsy specimens.

All employees' occupational health records were reviewed and information was collected on demographics, country of birth, BCG vaccination, job classification, years of employment, and TST status. Autopsy room workers were questioned about their use of personal respiratory protection. The TST conversions per person-year of employment were calculated using the life table analysis method. Risk factors for TST conversion were studied with a multivariate logistic regression analysis along with performing evaluation of the employee screening program.

### **RESULTS**

Two TB cases were confirmed among employees in 1995. Both isolates were available for restriction fragment length polymorphism (RFLP) typing. Out of 31 persons at risk screened in 1995, 10 had recent TST conversions (32%). Six cadavers infectious for TB were autopsied between June 1994 and June 1995; only two of the *Mycobacterium* isolates for these cadavers were available for RLFP. The RFLP typing showed that the two case-isolates differed from each other and from the two available cadaver-isolates.

Of 184 employees, occupational health records were found on 120. Of these, 22 (18%) had a positive TST at hire or at a later date but with no documentation of previous negative TST and were therefore excluded from the analysis. Ninety-eight (82%) had a negative TST at hire or later during the course of employment. These 98 employees constituted the retrospective cohort at risk for TB infection. Sixty-four (65%) were males. The median age was 47 years (range from 24 to 68 years). Of the employees, 51% were White, 25% were



Hispanic, 16% were Black and 8% were Asian. Ten percent were foreign-born but were unsure about BCG vaccination status. All of the autopsy room workers (forensic physicians and technicians) reported inconsistent use of their personal respirators due to difficulty in communicating while wearing them.

Thirty-seven of the cohort (38%) developed a positive TST. The life table analysis showed a probability of TST conversion at 10 years of 81% for autopsy room workers versus 24% for non-autopsy room workers (clerical, investigators, custodial, etc.) Overall the probability of TST conversion at 10 years was 40% for all employees.

Using first a bivariate analysis to select variables, then a backwards elimination, a multivariate logistic regression model was built to assess risk factors for TST conversion. It included autopsy room exposure, Black and Asian ethnicity, sex and duration of employment. Autopsy room exposure was associated most strongly with conversion (OR = 12.5,  $p < .0001$ ), followed by Asian and Black ethnicity (OR 10.9 and 4.5, respectively,  $p < .03$ ), and then job duration and male sex (OR 3.2 and 3.1,  $p < .05$ ). Being foreign-born and age over 45 were not independent predictors of TST conversion.

An evaluation of the employee screening program showed that, in occupational health records, pre-employment TST was documented for only 74/184 (40%) of all employees and for 30/46 (65%) of autopsy room workers. A follow-up TST was documented on average every 3.3 years, as opposed to the yearly screening recommended for employees. There was no screening policy enforcement for delinquent employees.

## **LIMITATIONS AND CONCLUSIONS**

In conclusion, two cases of TB and 10 TST conversions were found in one year among employees at the Coroner's office. The source of infections could not be determined. Exposure to cadavers or employee-to-employee transmissions both remain possible explanations. Assessment of the source of transmission was limited.

The life table analysis showed an extremely high risk for TB infection among employees at the Coroner's office, with an 80% probability of conversion at 10 years of employment for autopsy room workers. The quality of the employee-screening program for TB was not satisfactory. Adherence with respirator use among autopsy room workers was poor.

To prevent TB infection among employees, personal respiratory protection should be improved. Mandatory use of an upgraded respirator allowing satisfactory oral communication is necessary.

To assess TB control, surveillance for recent conversions should be improved through:

- mandatory pre-employment and yearly TST screening;
- a two-step TST testing procedure;
- a unique health care provider or centralized TST result database; and
- TST screening every 6 months until disruption of transmission is documented.