Silicosis Associated With Engineered Stone Exposures and Tuberculosis: Overlaps in Clinical Presentation and Delayed Diagnosis

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Rationale Accelerated silicosis in young immigrant workers exposed to respirable crystalline silica while fabricating engineered stone countertops is a growing respiratory health concern in the US and worldwide. Recognition and diagnosis of silicosis in young workers may be delayed due to clinical and radiographic similarities between silicosis and tuberculosis (TB). We aimed to examine the intersection between TB and silicosis among engineered-stone-associated (ES) silicosis cases in California. Methods Cases of silicosis were identified through multiple sources, including direct health care provider reporting, statewide hospital-based patient discharge and emergency department data, medical testing following enforcement investigation, referrals from local health jurisdiction tuberculosis controllers, and electronic case reporting via the state's Reportable Conditions Knowledge Management System. Patient medical records were utilized to obtain demographic information, medical history including TB testing and disease, social and employment information, radiology, and treatment course. For some cases, patients or next-of-kin were subsequently contacted to obtain additional occupational and exposure history. Results We identified 90 ES silicosis cases diagnosed between 2006 and 2023, 50% of whom were diagnosed in 2022-23. Only 10 (11%) had private health insurance. Of the 63 cases with birthplace information, 62 (98%) were foreign-born males. The median age at diagnosis was 45 [interquartile range (IQR) 39 – 50]. 45 cases had information about TB testing or disease, including 14 (31%) that had received a diagnosis of active pulmonary TB. Among the 14, two (14%) had remote disease, two (14%) had confirmed comorbid active pulmonary TB disease and silicosis, and 10 (71%) had an initial diagnosis of presumed active pulmonary TB that was ultimately ruled out. Among the 10 cases with presumptive TB, 7 cases with detailed information experienced an average delay in diagnosing their silicosis of 3.5 months and 6 (60%) received treatment for active TB. Among the 10 cases with delay in diagnosis, one underwent a double lung transplant and two are deceased due to silicosis. ConclusionsOur data demonstrate that the intersection between TB and ES silicosis creates challenges in distinguishing the two diseases. Imaging and symptomatology can overlap, leading to delay in silicosis diagnosis, with implications for management of silicosis alone and of comorbid disease. With the rapid increase in reported cases of pulmonary silicosis due to engineered stone fabrication among young immigrant men, these findings highlight the importance of health care providers asking about occupation and work exposures as a routine part of diagnosis and patient care.

This abstract is funded by: CDC/NIOSH cooperative agreements U60OH008468 and U19OH012293