

Resurgence of an Epidemic: Crippling Silicosis in Engineered Countertop Workers – A Pilot Single Institutional Cross-Sectional Study

PURPOSE

Our goals are to (1) describe the silicosis imaging phenotype in a unique patient population - engineered stone countertop workers who are exposed to higher concentrations and different mixtures of silica dust than historically described silicosis cases, (2) correlate chest computed tomography (CT) findings with clinical severity as measured by pulmonary function tests (PFTs), and (3) assess primary provider and radiologist awareness of silicosis at presentation.

METHODS AND MATERIALS

We performed a cross-sectional pilot study at a large urban safety-net hospital with few historic cases of silicosis. The pilot analysis included 21 patients diagnosed with silicosis with available CT and PFTs. The CT images were classified as typical or atypical for chronic silicosis defined as mediastinal lymphadenopathy and upper-lobe predominant small nodularity and/or progressive massive fibrosis. Standard descriptive statistics and preliminary inferential statistics were performed. Initial clinician/radiologist impression was graded in a binary fashion for recognition of silicosis. Given pilot nature, no *a priori* power calculations or evaluation for interrater reliability were performed. The full cohort of 55 patients diagnosed with silicosis will be analyzed for the current presentation.

RESULTS

Fifty-five engineered stone workers with silicosis were identified, of which 21 underwent preliminary analysis. Of these, 100% were male and Hispanic with median age of 43 years (IQR 36-49) and median exposure of 18 years (IQR 10-22). All patients were symptomatic, with dyspnea (91%, 19/21) and cough (81%, 17/21) the most common symptoms. Recognition of silicosis at the initial encounter was 19% (4/21) by the primary clinicians and 33% (7/21) by the radiologists, with alternative diagnoses (especially, mycobacterial/atypical infection) initially suggested in most cases. Upon secondary retrospective review, 52% (11/21) of cases were typical for classic silicosis. The other 48% (10/21) had atypical imaging features (e.g. diffuse nodularity, multiple cavitary lesions, ground-glass/mosaic attenuation and/or crazy paving). PFTs revealed a restrictive pattern in 85% (18/21). In addition, patients with consolidations (including large opacities >1 cm) had lower DLCO than patients without large opacities (18.1 ± 2.7 vs. 24.5 ± 1.7 , $p=0.02$). These correlative/inferential statistics should be interpreted with caution prior to the analysis of all 55 patients.

CONCLUSIONS

Engineered stone countertop workers commonly present with atypical and advanced features of silicosis.

CLINICAL RELEVANCE/APPLICATIONS

The unexpected resurgence of a new silicosis epidemic with atypical features may catch providers off-guard and lead to delays in diagnosis.