

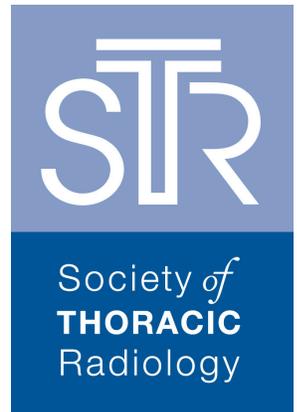
SOCIETY OF THORACIC RADIOLOGY

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RELEASE DATE October 14, 2019



FOR IMMEDIATE RELEASE

ACCELERATED SILICOSIS IN ENGINEERED STONE WORKERS

The association of crystalline silica and interstitial lung disease is well known to thoracic radiologists. In addition, the International Agency for Research on Cancer (IARC) identifies silica as carcinogenic, making it the most ubiquitous carcinogen on the planet. Although you are likely familiar with the traditional industries associated with intense silica exposures such as sandblasting, mining, quarrying and foundry work, there have been recent reports of silicosis occurring outside these exposure settings. Examples include outbreaks of silicosis in the garment industry in Turkey related to the process of “distressing” jeans and elevated exposures to silica in the frac sand mining industry in the U.S.

We felt it important to alert the STR community to recent reports of silicosis in the context of exposure to engineered stone (manmade stone composed of finely crushed rock and resin used in kitchen and bathroom countertops).(1) The silica content in this material is approximately 90%, much higher than the naturally occurring alternatives, granite (30%) and marble (3-10%). Significant exposures may occur at several time points in the process of fabrication, installation and in-home finishing. Exposure to engineered stone has resulted in “accelerated” silicosis, a form of the disease with shorter latency period. In Australia, a review of 78 stonemasons with silicosis reports a mean age of 34.1 years and a mean exposure of 12.9 years with almost half of subjects reported to have accelerated silicosis. (2) Rose et al (3) reported 18 cases in California, Colorado, Texas and Washington; two patients in this series also had latent TB and 5 had autoimmune disorders, known associations with silicosis.

Chest radiographic findings have included simple silicosis in the majority of cases although complicated silicosis is reported in roughly 10-20% depending on the study. The use of conventional radiography for screening may have limited sensitivity with “normal” ILO B-reading reports in 20-43% of studies. HRCT findings include centrilobular or perilymphatic micronodules with an upper and mid zone predominance, diffuse ground glass opacification and associated enlarged hyperdense lymph nodes. (4) Associated upper lobe fibrosis is also reported.

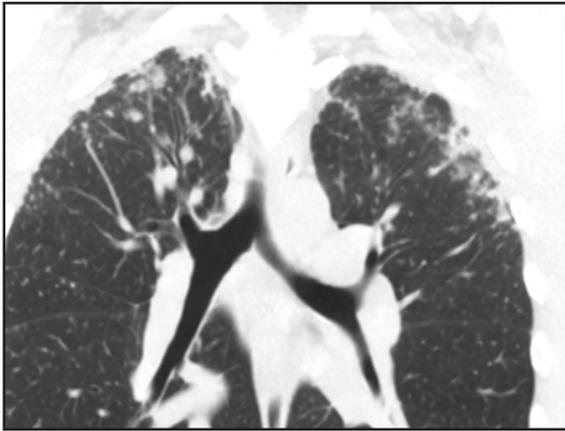


FIGURE 1A 29 yo male in the benchtop industry for 7 years with accelerated silicosis. 1a. Note upper lobe predominant perilymphatic nodules, subpleural pseudoplaque and coalescent nodules. Nodules exceeding 1 cm in size are indicative of complicated silicosis. (Case courtesy of Dr. Catherine Jones, Brisbane, Australia)

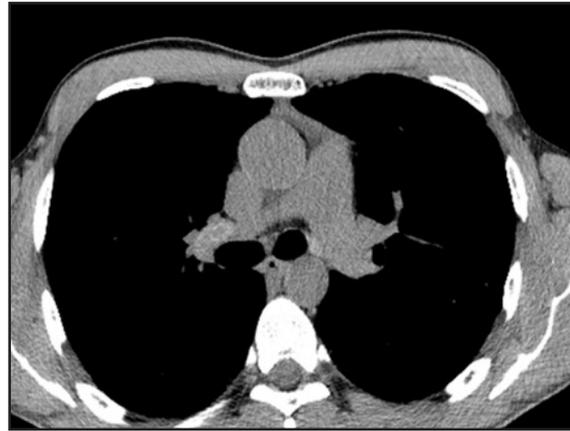


FIGURE 1B High density mediastinal and hilar lymph nodes have been shown to precede parenchymal silicosis reflecting the lymphatic route of dust clearance. (Case courtesy of Dr. Catherine Jones, Brisbane, Australia)

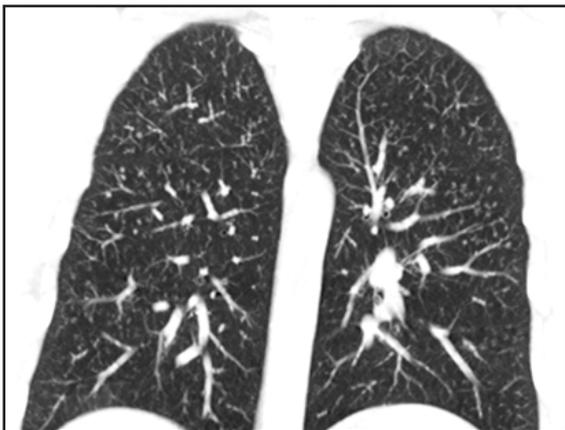


FIGURE 2. 27 yo male in the benchtop industry for 7 years. Maximum Intensity Projections (MIP) may improve the detection of small nodules. (Case courtesy of Dr. Catherine Jones, Brisbane, Australia)

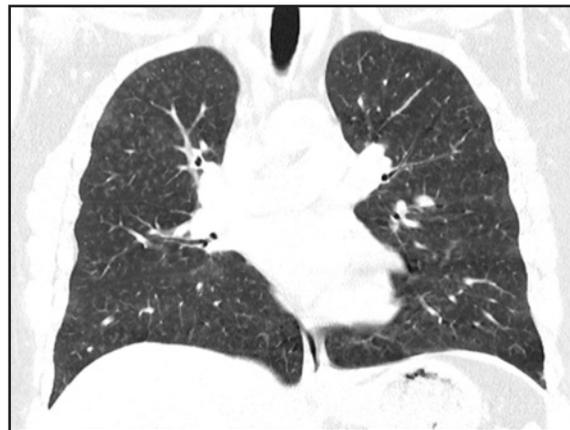


FIGURE 3. Engineered stone worker with diffuse centrilobular ground glass opacities in a pattern similar to hypersensitivity pneumonitis. (Case courtesy of Dr. Catherine Jones, Brisbane, Australia)



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