



Sensitivity of diagnostic tools for silicosis associated to fabrication of quartz conglomerates

Gabriella Guarnieri, Mauro Salasnich, Paolo Lucernoni, Marta Sbaraglia, Maria Grazia Putzu, Paolo Zuliani, Stefania Vio, Filippo Liviero, Pietro Maculan, Paola Mason, Piero Maestrelli

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Abstract

Introduction: Diagnosis of silicosis is a resurgent issue since clusters of this occupational disease have been reported in relation to fabrication of quartz conglomerates.

Aim: To evaluate the sensitivity of different diagnostic tools in the detection of silicosis.

Methods: Active search of pneumoconiosis was performed in 4 companies of North-Eastern Italy involved in the fabrication of benchtops made of artificial quartz conglomerates. Occupational history, silica cumulative exposure, chest x-ray, spirometry, carbon monoxide lung diffusion (DLco) and chest HRCT (classified according to International Classification of HRCT for Occupational and Environmental Respiratory Diseases) were obtained. In selected cases, trans-bronchial biopsies were taken for histological evaluation and identification of silica crystals in the tissue by Electron Microscopy.

Results: Twenty-two cases of silicosis were diagnosed. Mean age at diagnosis was 43 years and duration of exposure to quartz conglomerate dust was 3.5 to 20 years. The range of silica cumulative exposure was 1.74-5.40 mg/m³/years. Abnormal findings were detected in 41% of chest x-ray, in 38% of spirometry (restrictive pattern) and 57% of DLco. HRCTs were abnormal in all cases showing well-defined rounded opacities (size p), irregular/linear intralobular opacities and bilateral enlarged mediastinal lymph-nodes. Histological findings consistent with silicosis were observed in 18 cases. Numerous silica particles (diameter 0.1-5 µm) were identified in lung tissue.

Conclusions: Chest HRCT is the most sensitive diagnostic tool for the detection of silicosis, while reduction in DLco is the most frequent functional abnormality. The results suggest that chest HRCT is indicated for screening of workers with high cumulative exposure to silica.

Occupation Diagnosis Environment

Footnotes

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