

Pathologic Type of Progressive Massive Fibrosis in the National Coal Workers' Autopsy Study (NCWAS) 1971-1996

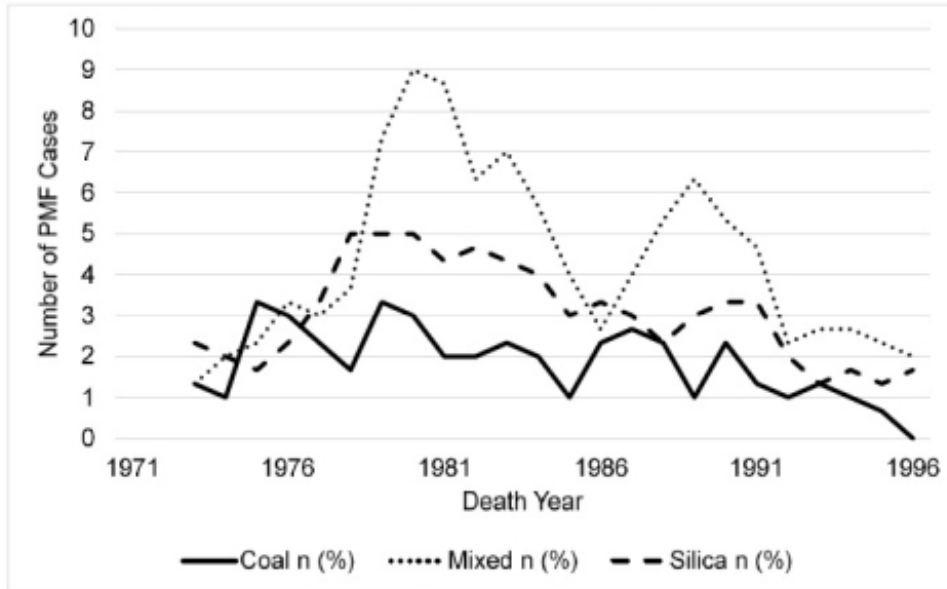
R. A. Cohen¹, M. Orandle², A. F. Hubbs², K. S. Alberg¹, L. H. Go³, S. Clingerman², K. Fluharty², T. Dodd², C. S. Rose⁴, J. L. Abraham⁵, S. Sanyal⁶, A. Franko⁷, J. Murray⁸, N. Vorajee⁹, L. Zell-Baran¹⁰, E. L. Petsonk¹¹, R. Zulfikar¹², F. H. Y. Green¹³; ¹EOHS, Univ of Illinois at Chicago, Chicago, IL, United States, ²Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown, WV, United States, ³EOHS, University of Illinois at Chicago, Chicago, IL, United States, ⁴Natl Jewish Hlth, Denver, CO, United States, ⁵SUNY Upstate Medical Univ, Syracuse, NY, United States, ⁶SUNY Upstate Medical Center, SYRACUSE, NY, United States, ⁷University of Calgary, Calgary, AB, Canada, ⁸School of Public Health, University of the Witwatersrand, Johannesburg, South Africa, ⁹Pathology, National Institute of Occupational Health, Johannesburg, South Africa, ¹⁰DEOHS, National Jewish Health, Denver, CO, United States, ¹¹West Virginia University, Morgantown, WV, United States, ¹²Section of Pulmonary, CCM and Sleep, West Virginia University, Morgantown, WV, United States, ¹³Pathology and lab Medicine, Univ of Calgary, Calgary, AB, Canada.

Corresponding author's email: bobcohen@uic.edu

Rationale: Recent reports have documented an increase in progressive massive fibrosis (PMF), the most severe form of coal workers' pneumoconiosis, in active and former US coal miners. There is radiographic and pathologic evidence that suggests this surge is at least in part related to excessive exposure to respirable crystalline silica. We analyzed cases of PMF from the National Institute of Occupational Safety and Health (NIOSH) NCWAS to determine if there was a historical shift in the type of PMF from classic coal mine dust associated disease towards a predominant silicotic form over the years 1971-1996. Since 1996, comparatively few cases of PMF have been accessioned in NCWAS. **Methods:** Occupational pathologists reviewed each case under light microscopy. PMF was classified if one or more mineral dust-laden fibrotic lesion(s) with dense deposition of collagen fibers, measuring > 10 mm in long axis diameter was present. The lesions were categorized into three types: Silicotic-type PMF had fused silicotic nodules which were the predominant feature (> 75%) of the area of the lesion, mixed-type PMF had >25% but ≤ 75% silicotic nodules, and coal-type PMF had ≤ 25% silicotic nodules. **Results:** Of 7,200 NCWAS cases available, 4,690 had adequate lung tissue and evidence of pneumoconiosis and had been classified by NIOSH pathologists. Of these, 387 cases had previously been classified as PMF, however only 325 had material currently available for review. These 325 miners were born between 1885 and 1942. Figure 1 summarizes the type of PMF by year of death. There were 141 coal-type PMF cases, 107 mixed-type, and 77 silicotic-type PMF. There were no statistically significant differences in the distribution of these cases by PMF type over time, either by frequency or proportion. **Conclusions:** Review of PMF type in coal miners' lung tissue samples from the NCWAS did not show a transition to silica predominant disease in

miners who, if they started work at age 18 and had a 40 year career likely worked between 1903 and 1982. Our findings suggest that the shift in mining exposures driving the resurgence in rapidly progressive pneumoconiosis and PMF likely occurred more recently. Pathologic review and classification of PMF cases accessioned to NCWAS after 1996, as well as lung tissue from recently diagnosed cases through other sources and repositories may lead to a better understanding of recent changes in the severity and progression of this preventable disease.

Figure 1. PMF cases (n=325) by type and death year (1970-1996), as a 3-year moving average



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