Editorial Commentary

Surveillance of work-related and occupational respiratory disease study: efforts to better understand silicosis and to reduce workers' exposure

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Silicosis is one of the most important occupational diseases worldwide. In 2013, 46,000 silicosis-related deaths were reported in the world (1). China, for instance, estimates more than 24,000 events of death every year due to silicosis (2). Its pathogenesis is traditionally associated with environmental exposure to specific antigens from industries such as mining, quarrying and foundry. More recently, new sources of exposure, such as exposure to silica, have been linked to the pathogenesis of silicosis (2,3). In the UK, it is estimated that 600,000 workers are exposed to silica daily, what is associated with an important epidemiological impact of the disease, particularly because of the long-latency of the development of symptoms in the exposed population (3). Treatment options for silicosis are still limited and, although reducing exposure to silica improves patient's prognosis, it does not prevent disease progression, ultimately leading to lung transplantation, which substantially increases health care costs.

In light of the important impact of silicosis, the epidemiologic analysis by Barber *et al.* found the Surveillance of work-related and occupational respiratory disease (SWORD) to be an important resource of epidemiological data on Silicosis to the literature. The research group carefully conducted a 22-year analysis (January 1996–December 2017), and stratified all 216 reported cases into different industry categories and age groups to better evaluate the demographic risk factors of the disease. According to their report, mean age at diagnosis was around 61 years of age, what is consistent with the long-latency pathophysiology of silicosis. It is worth noting that most up to two-third of the cases that become symptomatic are diagnosed while the patient is of working age—which increases the economic impact of this condition.

Although the ratio of cases was evenly distributed across the different silica-related industry groups, foundry/metal manufacturing and quarrying had the worst numbers. In foundries, mining, and construction there is an increase in the incidence of cases with increasing age, whereas in quarrying, tunneling and ceramic/brick industry, most cases are diagnosed whilst they are still of working age (<65 years). Interestingly, the decline of the UK mining industry in recent years is clearly represented in the age distribution of this industry—up to 70% of patients with mining-related silicosis are older than 65 years old. Dental technicians and jewelry workers had a minor contribution to the totality of cases of silicosis; however, it is worth noting that other sources of exposure can be relevant to the demographics of silicosis. Some studies in the literature already indicate an increasing prevalence of silicosis among jewelry silver/goldsmiths in Europe, as well as among dental technicians in the US (4,5).

The study by Barber *et al.* was the first attempt to deeply understand the demographic risk factors and distribution of silicosis across different age groups in the UK. Several other inferences to the silicosis literature were possible after SWORD. First, it is difficult to estimate real silicosis'

incidence using SWORD because of the long disease latency and the large group of asymptomatic cases that were not yet diagnosed.

In conclusion, the demographic results pointed in SWORD may be used as a baseline for future investigations to explore the outcomes of recent efforts to reduce workers' exposure to silica. Moreover, there is an impending need for more demographic studies evaluating silicosis in other developed and developing countries to better understand the epidemiology of this disease worldwide.

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