



Recommendations of SEPAR

## Guidelines for the Diagnosis and Monitoring of Silicosis<sup>☆</sup>



Ramón Fernández Álvarez,<sup>a,\*</sup> Cristina Martínez González,<sup>a</sup> Aida Quero Martínez,<sup>a</sup>  
 José Jesús Blanco Pérez,<sup>b</sup> Luis Carazo Fernández,<sup>b</sup> Amador Prieto Fernández<sup>c</sup>

<sup>a</sup> Área de Gestión de Pulmón, Servicio de Neumología, Hospital Universitario Central de Asturias, Oviedo, Spain

<sup>b</sup> Servicio de Neumología, Hospital Universitario Central de Asturias, Oviedo, Spain

<sup>c</sup> Servicio de Radiología, Hospital Universitario Central de Asturias, Oviedo, Spain

### ARTICLE INFO

#### Article history:

Received 17 March 2014

Accepted 22 July 2014

#### Keywords:

Silicosis

Pneumoconiosis

Occupational disease

### ABSTRACT

Silicosis is one of the occupational respiratory diseases most commonly encountered in our setting. It is caused by inhalation of crystalline silica that triggers a fibrotic response in the lung parenchyma. It presents as diffuse interstitial disease and clinical expression ranges from asymptomatic forms to chronic respiratory failure. Diagnosis is based on clinical history and radiological findings. There is no effective treatment, and once diagnosed, the patient must avoid all sources of occupational exposure. In these guidelines, the clinical, radiological, and functional aspects of silicosis are reviewed, and strategies for diagnosis, monitoring, and classification of patients are proposed, along with recommendations regarding the occupational implications of this disease.

© 2014 SEPAR. Published by Elsevier España, S.L.U. All rights reserved.

### Normativa para el diagnóstico y seguimiento de la silicosis

#### RESUMEN

La silicosis es una de las enfermedades respiratorias de origen ocupacional más frecuentes en nuestro entorno. Está ocasionada por inhalación de sílice cristalina que desencadena una respuesta fibrótica en el parénquima pulmonar. Se presenta como una enfermedad intersticial difusa y su expresión clínica es variable, existiendo desde formas asintomáticas hasta la insuficiencia respiratoria crónica. El diagnóstico está basado en la historia clínica y los hallazgos radiológicos; no tiene un tratamiento efectivo, y cuando se diagnostica precisa que el paciente sea apartado de toda fuente de exposición laboral. Esta normativa repasa aspectos clínicos, radiológicos y funcionales, sugiriendo también estrategias de diagnóstico y seguimiento para la clasificación de los pacientes, y recomendaciones para las implicaciones laborales de esta enfermedad.

© 2014 SEPAR. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

#### Palabras clave:

Silicosis

Neumoconiosis

Enfermedad profesional

### Introduction

Silicosis is a diffuse pulmonary interstitial disease characterized by a fibrotic response in lung parenchyma caused by continual inhalation of crystalline silica (SiO<sub>2</sub>). It is one of the primary pneumoconioses—diseases caused by inhalation of mineral dust—and its presentation, clinical course, and severity are variable. No effective treatment is available, so prevention and early

diagnosis are essential if this disease is to be controlled. Silicosis has been known since ancient times, and while there have been some improvements in prevention, it continues to be a global public health problem, and one of the most common occupational respiratory diseases in our setting. Because it has been classified as an occupational disease, physicians have the additional responsibility of assessing the work capacity of affected patients. These guidelines, which review the basic aspects of the disease and standardize diagnostic methodology, treatment, and prevention, are aimed at pulmonologists and doctors attending patients with potential exposure to silica.

### Epidemiology

No reliable figures are available on the population exposed to silica inhalation, so the real prevalence of the disease is

<sup>☆</sup> Please cite this article as: Fernández Álvarez R, Martínez González C, Quero Martínez A, Blanco Pérez JJ, Carazo Fernández L, Prieto Fernández A. Normativa para el diagnóstico y seguimiento de la silicosis. Arch Bronconeumol. 2015;51:86–93.

\* Corresponding author.

E-mail address: [enellano@gmail.com](mailto:enellano@gmail.com) (R. Fernández Álvarez).



Fig. 1. Provinces in which new cases of silicosis were diagnosed (2012).

**Table 1**  
New Diagnoses of Silicosis.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number	375	264	224	151	115	134	165	220	256	166

Source: Reports and statistics of new silicosis cases registered in the National Silicosis Institute (2008–2013).<sup>6</sup>

unknown. However, epidemiological relevance can be estimated from databases such as the CAREX registry. In 2000, this registry recorded 3.2 million individuals exposed to silica in the European Union. In Spain in 2004, 1.2 million workers, particularly in the construction sector, were exposed to this risk.<sup>1</sup>

In Spain, varying prevalences have been reported from cross-sectional studies conducted in industries where there is a risk of silica inhalation: 47.5% in granite quarries in El Escorial (1990),<sup>2</sup> 6% in underground fluorite mines in Asturias (1993),<sup>3</sup> 6% in the slate industry in Galicia (1994),<sup>4</sup> and 6% in granite works in Extremadura.<sup>5</sup> In the annual reports of the National Silicosis Institute, the disease is listed as occurring in most of the autonomous communities of Spain, although data from some regions are not available<sup>6</sup> (Fig. 1). Since 2008, the number of new diagnoses has increased in industries other than coal mining, such as granite, slate, and artificial silica conglomerate works. This phenomenon may reflect changes in the incidence of the disease or factors derived from socioeconomic circumstances (Table 1).

**Causes and Risk Factors**

*Causes*

Silicosis is caused by the inhalation of crystalline silica, including quartz (the most abundant in nature), cristobalite, and tridimite.

Sources of exposure are almost exclusively occupational (Table 2) and are numerous, as silica is found in varying proportions in many minerals.

In principle, anyone working in processes involving earth works or products containing silica, such as building or masonry and cement work can be exposed to silica. In our setting, we see a high proportion of quarry workers and ornamental stone cutters (granite and slate). Moreover, in recent years, cases of silicosis have been described in artificial stone workers exposed to dust generated from the handling of quartz conglomerates widely used in interior decoration, kitchens, and bathrooms that have a crystalline silica content of between 70% and 90%.<sup>7</sup> Environmental exposure to respirable crystalline silica may be significantly higher in the vicinity of industrial sources of dust, such as quarries and sand works, and cases of non-occupational silicosis have been reported in communities living close to such places.<sup>8</sup>

**Table 2**  
Main Occupations With Exposure to Crystalline Silica.

Excavations in mines, tunnels, quarries, underground galleries
Quarrying, cutting and polishing siliceous rock
Dry cutting, grinding, sieving and manipulation of minerals and rock
Manufacture of silicon carbide, glass, porcelain, earthenware and other ceramic products
Manufacture and maintenance of abrasives and detergent powders
Foundry work: cast shakeout, sprue removal and blast cleaning
Milling work: polishing, filing products containing free silica
Sandblasting and grinding
Pottery industry
Handling quartz conglomerates and ornamental stone
Dental prostheses

Download English Version:

<https://daneshyari.com/en/article/4205501>

Download Persian Version:

<https://daneshyari.com/article/4205501>

[Daneshyari.com](https://daneshyari.com)