



Medicine for Managers

Dr Paul Lambden BSc(Hons) MB BS BDS(Hons) FDSRCSEng MRCSEng LRCPLond DRCOG MIHSCM

Silicosis

Silicosis is a chronic lung disease, the result of inhalation of silica dust usually over many years. It has typically been associated with living or working around mining and construction sites, where some types of stone, sand, rock or clay form the fine dust which is easily inhaled. The result over time is the development of chronic lung disease resulting in poor lung function, with progressive symptoms of cough and breathlessness.

Because of its presence in rocks, sand and soil, and also in some plants and water, people engaged in particular occupations are particularly vulnerable, including:

- Stone cutting in masonry work
- Construction and demolition work
- Ceramics and glass making
- Mining and quarrying

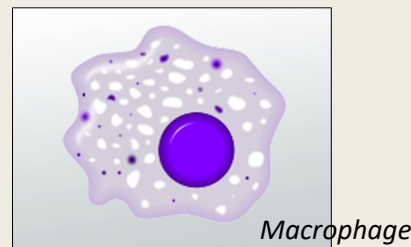
Domestically silica gel packages are often found in manufactured goods, added to absorb moisture.

Signs and symptoms

Silica is **non-toxic** if eaten or drunk. It is only harmful if **inhaled** and symptoms usually develop after 5-20 years of exposure and, once present, may continue to worsen



even if the exposure ceases. The silica damages cells called macrophages, which are part of the immune system, in the alveoli of the lung.



The result of the damage is, initially, the development of an increasingly frequent **cough** productive of phlegm, and subsequently increasingly persistent **shortness of breath** together with **tiredness and lethargy**.

The symptoms worsen despite ceasing to be exposed to the dust and ultimately some of those affected will find walking, climbing stairs and other physical activities increasingly difficult.

Ultimately some even find speaking difficult and can only say a few words between gasps. Such

patients become confined to their home or even to bed.

It is irreversible because the silicosis results in worsening inflammation following by scarring in the lung, which destroys the alveolar function. Death is often due to **respiratory failure**. Rates of the disease have improved with modern safety regulations.

Patients with silicosis are at greater risk of getting other lung diseases, such as bronchitis, chronic obstructive pulmonary disease and lung cancer, heart failure and other general diseases such as kidney disease or arthritis.

Diagnosis of silicosis

Patients visiting the doctor with cough or breathlessness should be questioned carefully about occupation, which may lead to a suspicion of silicosis or other lung disease and warrants referral for pulmonary testing and assessment.

Such tests include:

- Chest x-rays
- Other imaging such as CT or MRI
- Sputum testing
- Broncho-alveolar lavage if indicated. Essentially fluid is washed into the lungs and then withdrawn and examined.
- Laboratory tests cannot diagnose silicosis but are used to exclude other causes of lung disease, such as TB by using a tuberculin test.
- Lung function tests
- Biopsy of the lung if necessary

Because there is no cure, treatment is by assisting in the management of symptoms by:

- **Changing employment** or **taking steps** to avoid further dust inhalation
- **Stopping smoking**, which is essential
- **Medication** with drugs to dilate the bronchi to improve airflow
- **Pulmonary rehabilitation**
- **Oxygen therapy**
- Obtaining **pneumococcal** and regular **'flu injections**.

Outlook and Prognosis

Much depends on the duration and degree of exposure to silica dust, age and any other concurrent medical conditions or diseases. In general the prognosis is better if the symptoms do not further worsen once exposure is stopped.

Life expectancy is very variable but, with appropriate precautions after diagnosis, some people can live for between ten and twenty years after diagnosis.

There is no routinely used drug therapy for silicosis but the drug **nintedanib** is approved in the UK for treatment of progressive lung fibrosis in patients whose disease is actively worsening, as evidenced by disease progression within the previous twenty-four months.

Mercifully silicosis, which is a horrible disease, has declined although there have been some concerns about a possible increase in cases where people have been working in stonemasonry. Hopefully the disease can be controlled with early diagnosis, effective protection, and emergent medication to arrest the worst ravages of the lung fibrosis which inevitably accompanies it.

paullambden@compuserve.com

