

## Case Report

# A Case of Silicosis in the Ceramic Sector

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### Abstract

Workers in the ceramic sector can develop silicosis due to silica exposure. A case of this occupational disease was diagnosed in a periodic examination at the polyclinic with bilateral millimetric nodules observed on a chest X-ray. The patient was a 34-year-old male with no active complaint. He had worked in the ceramics sector for 19 years. He was a current smoker with a history of 25 pack-years. The chest X-ray was assessed as pneumoconiosis q/q and 2/2 according to the International Labour Organization classification standards. Bilateral multiple nodules were observed on high-resolution computed tomography images. Pulmonary function and diffusing capacity of the lungs for carbon monoxide tests were normal. The patient was diagnosed with silicosis. Silicosis due to silica dust exposure has been known for many years. Although it can be prevented, silicosis continues to be a problem in developing countries, such as our country. It is very important to prevent smoking, to take effective dust precautions and other preventive measures, and to make an early diagnosis with regular radiological evaluations.

**Keywords:** Ceramics, foundry, pneumoconiosis, silicosis

Silicosis is one of the oldest occupational diseases known to mankind, which had been accepted as phthisis by miners centuries ago. Unfortunately, the disease is still endemic worldwide, and fatal outbreaks that can be prevented continue to be reported.<sup>[1]</sup> In Turkey, silicosis has been reported in denim sandblasting factory and is called silicosis epidemic.<sup>[1, 2]</sup>

Silicosis is a progressive, fibrotic pulmonary disease caused by the inhalation of crystalline silica. Silica is a very common element on the earth. For this reason, there are many risks at occupational groups such as quarrying, tunnel work, ceramic workmanship, and ground crusting for silicosis.<sup>[1, 3-5]</sup>

People who work on mixing, casting, glazing, heating, shaping, grinding, drying, packing, mixing of ceramic industry, are at risk about silicosis.<sup>[6]</sup>

Although silicosis is a preventable problem, it has been a problem in developing countries like our country. For this

reason, we found it appropriate to present a case having silicosis diagnosed in the ceramics industry.

### Case Report

He was 34 years old and had no active complaint. For 19 years he had been working in the foundry department of ceramics industry. He had bilateral millimetric nodules on chest X-ray. He had been using to smoke for 25 package-years. Chest x-ray was assessed as pneumoconiosis q/q 2/2 according to ILO standards (Fig. 1: Diffuse nodular opacity was seen on chest x-ray). Bilateral multiple nodules and apical sections' fibrohepatic changes of both lungs were observed on the high-resolved computed tomography (fig. 2, 3).

His sputum was examined for mycobacterium tuberculosis cultures at three times and mycobacterium tuberculosis cultures were observed not reproducing. His six minutes walk test was observed as 468 meters, sPO<sub>2</sub>: 95% (pre-test), sPO<sub>2</sub>:

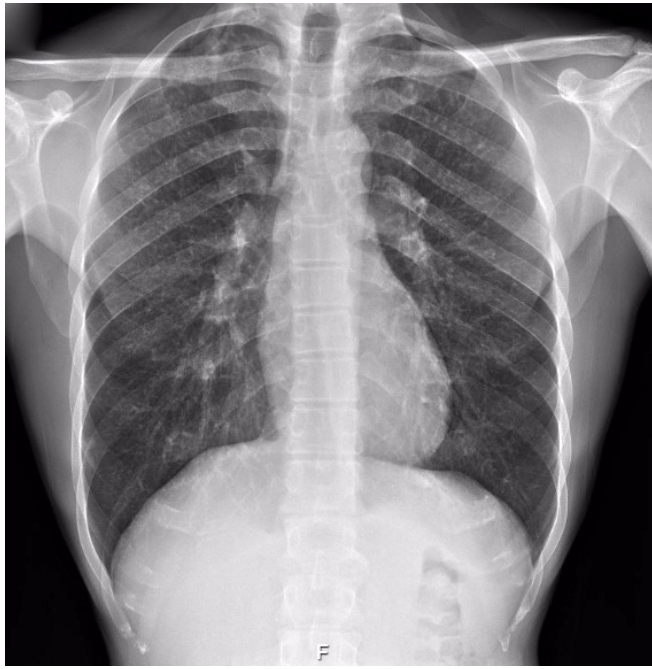
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**Figure 1.** Diffuse nodular opacity was seen on chest x-ray.

97% (post test), pulse: 83/minute (pre- test), pulse test: 104/min (post test), His pulmonary function test (PFT) was examined as FEV1/FVC: 75.2%, FEV1: 3.58 L (94%), FVC: 4.76 L (102%). His DLco: 27.19 ml/mmHg/min (86%), DLco/Va: 4.22 ml/mmHg/93%). Pulmonary function test and DLCO were assessed normally. The patient's working history, physical examination, laboratory and radiology results was

evaluated and then was diagnosed as silicosis. It was suggested to patient having quit smoking and stay away from any air polluters.

## Discussion

The patient having silicosis may have cough, loss of appetite, shortness of breath, or not clinical signs.<sup>[4]</sup>

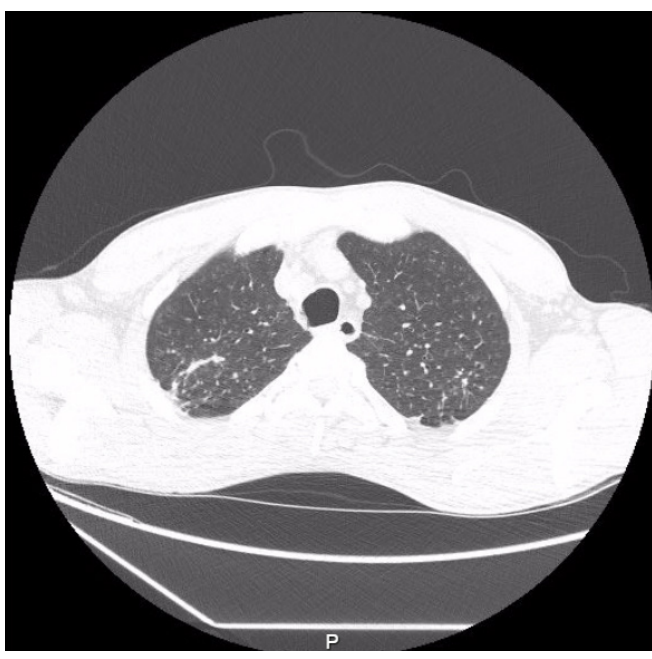
Typically round opacities (less than 10 mm) are seen in the upper lung regions<sup>[4]</sup> and sometimes mediastinal or hilar calcified lymph nodes can be seen for siliconeosis on the High-resolved computed tomography (HRCT).<sup>[7]</sup>

Silicosis is diagnosed by radiological evaluation. HRCT gives better findings than chest X-ray for early diagnosis of silicosis.<sup>[8]</sup>

International Work Organization (ILO) classification is assessed for pneumoconiosis. Radiographic abnormalities are systematically defined and recorded by ILO classification. The chest X-ray is used to classify. No radiographic finding is the pathognomonic finding of dust exposure.<sup>[9]</sup> Silicosis has collagen tissue enlargement and fibrosis and as a result many complications can be seen. One of them is respiratory failure.<sup>[5]</sup>

Progressive massive fibrosis and cor pulmonale may develop in patients having silicosis. Pleural involvement of silicosis is rare. The patient's spontaneous pneumothorax can be developed.<sup>[4]</sup>

As silicosis progresses, it can be complicated by mycobacte-



**Figure 2.** Apical sections's fibrothepatic changes of both lungs were observed on the high-resolved computed tomography.



**Figure 3.** Bilateral multiple nodules on the High-resolved computed tomography (HRCT).

rial and fungal infections. Adenocarcinoma and squamous cell carcinoma due to pulmonary fibrosis may occur late.<sup>[10,11]</sup>

The International Agency for Research on Cancer has classified respiratory crystalline silica as a category 1 human carcinogen.<sup>[12]</sup>

The patient having silicosis who use smoking can be examined for cancer.<sup>[13]</sup>

Silicosis is still causing disability and death. Precautions should be taken in risky business lines in terms of silicosis. Smoking should be avoided. Effective dust precautions must be taken. Radiological evaluations for early diagnosis should be made on time.

#### Disclosures

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**Conflict of Interest:** None declared.

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