



## A CASE OF SILICOSIS

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**ABSTRACT** Silicosis is an occupational fibrotic lung disease caused by inhalation of respirable free crystalline silicon dioxide or silica dust. Tuberculosis frequently accompanies silicosis as a comorbid condition particularly in tuberculosis endemic countries and contributes significantly towards mortality of patients with silicosis. Silicosis is one of the most common forms of pneumoconiosis. Silica is an ancient world wide occupational lung disease. Mining and processing of stones and glass products are more prevalent for this disease. Hereby reporting a 65yr old male patient presented with dry cough, breathlessness, evening raise of temperature was initially suspected for tuberculosis and found to be a silicosis patient.

**KEYWORDS :** Silicosis Associated Occupational Lung Disease

**INTRODUCTION:**

Silicosis is one of the most common forms of occupational lung disease which is reported globally. China has the highest reported silicosis. Less than 100 cases were reported in UK between 1996 and 2009. In the USA overall age adjusted mortality rates declined 8.9 per million in 1968 to 0.7 in 2004. Protective measures have caused a steady decline in death rates due to silicosis in the past few decades in developed countries, but new outbreaks still occur occasionally. Exact prevalence of silicosis in India is not known majority of these studies have utilized radiographic findings to make a diagnosis of silicosis. Silicosis is one of the progressive diseases. There are commonly three types of silicosis depending upon duration of exposure.

**HISTORY:**

65Yr old male smoker with smoking index of 422, known case of type 2 diabetes melitus and Systemic hypertension for 14 yrs came with complains of breathlessness MMRC grade 3 progressive nature, not associated with orthopnea, dry cough progressive nature, fever for past 1 week. He was having loss of appetite but unable to appreciate any weight loss. He worked as a granite stone molder and polishing worker by occupation for 45yrs.

Clinical examination revealed that the patient was conscious, oriented, febrile, dyspnea. He was non (anemic, icteric, cyanotic, pedal edema, lymphadenopathy and clubbing). PR – 86/ BPM, RR -20 breaths per minute with SPO<sub>2</sub>: 94 @ RA. BP: 130/80 mmHg, temperature of 101 degree F. CBG – 88 mg/ dl, BMI - 22Kg/ m.GCS:15/15. RS -B/L NVBS, CVS -S1S2 present and no added sounds, Abdomen soft and non-tender, CNS-NFND. ECG showed normal sinus rhythm.

**BLOOD INVESTIGATIONS:**

All base line investigations as follows:

CBC: Normal

Hb: 11.5 g/ dl

LFT: Normal

RFT: Normal

Urine routine: Normal

HIV (SPOT): Negative

HbSAg : Negative

HCV: Negative.

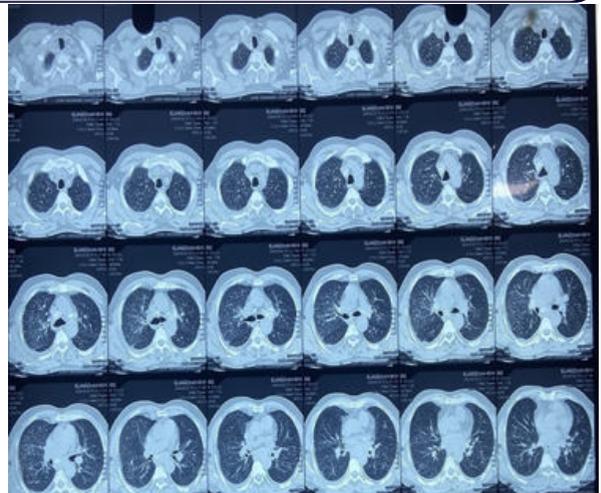
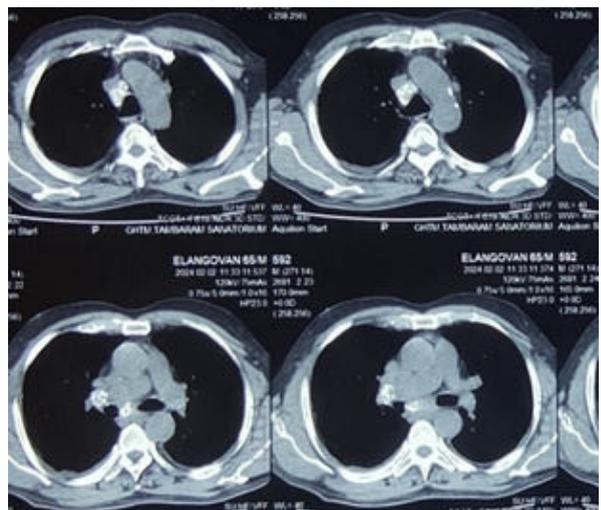
Sputum AFB and culture and sensitivity - negative

Sputum CBNAAT: Negative

Broncho alveolar lavage CBNAAT: negative, culture: no growth

**RADIOLOGY: HRCT CHEST**

1. Bilateral diffuse nodular opacities all over the lung areas
2. Egg shell calcification present at the right hilar region

**HRCT: LUNG WINDOW****HRCT MEDIASTINAL WINDOW****PATHOGENESIS:**

Silica dust entering lungs is first encountered by the lung macrophages which are followed by phagocytosis leading to myofibroblast and

collagen produced leading to fibrotic response activating INTERLEUKIN 1 signalling pathway, cytokines, tumour necrosis factor (TNF) resulting in inflammation and fibrosis. Depending upon the duration of silicon dust exposure it is classified into acute (Heavy exposure of small silica dust less than 3 yrs), accelerated (more intense exposure for 5 to 10yrs), chronic (more than 10 yrs classically produces silicotic nodules which are pathognomic of chronic silicosis). When tuberculosis bacteria is encapsulated within the silicotic nodule macrophages later reactivation of tuberculosis may occur. Complications of silicosis and silico tuberculosis may lead to cor pulmonale, spontaneous pneumothorax, broncholithiasis, lung cancer, hypoxaemic ventilator failure.

#### DIAGNOSIS:

Silicosis is more of radiological evidence. Predominately nodules present at upper lobe of lungs egg shell calcifications. Clinical exposure of silicosis over decades and ruling out other infection such as tuberculosis. Features which are suggestive of silicosis associated with tuberculosis infections are coalescence of nodules to form a focal opacity more than 1cm, fibrotic mass, conglomerate massive shadowing, poorly demarcated infiltrates of variable size that does not cross the lung fissures. Opacities surrounding pre-existing nodules, distortion of lung parenchyma due to fibrosis, bronchial stenosis which may be irregular.

#### TREATMENT:

Silicosis as per se is incurable. But tuberculosis along with silicosis is treatable. The main management goals are early detection of silicosis, disability limitation and treating associated tuberculosis if any. Treatment of silico tuberculosis is similar to that of normal pulmonary tuberculosis or tuberculosis elsewhere in the body careful monitoring of the patients formerly exposed to silicon dust workers to establish surveillance programs to prevent tuberculosis and to reduce disability remains the main aspect of management. The success rates of the treatment of tuberculosis in patients without silicosis were lower than that in patients with silicosis, the major management for only silicosis is continuous monitoring for disease progression, choosing a different job to avoid further exposure is the only main option which can resist to further progression and total lung transplant can be done for patients who are only suffering with silicosis without tuberculosis. Generally a longer duration of anti-tubercular therapy is needed for the patients associated with silicosis in their radiological appearance.

#### CONCLUSION:

Silicosis is still one of the worst prognostic diseases still worldwide, the prevalence of silicosis has not yet been controlled due to poor exposure of silica dusts exposure. Patient may present with symptoms similar to tuberculosis. Pulmonary function may show obstructive lung disease. Occupational awareness about silicosis should be widespread for future control and decreasing the incidence of silicosis associated diseases.

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