

PNEUMOCONIOSIS IN A STONE GRINDING FACILITY: A CASE REPORT

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ABSTRACT:

Silicosis is a fibrotic pneumoconiosis caused by the inhalation of fine particles of crystalline silicon dioxide (silica). Certain occupations such as mining, quarrying, denim sandblasting and tunnelling are associated with silicosis(1). There are three different clinical presentations: chronic, accelerated, and acute silicosis. The length of exposure and the latency period are crucial for the development of silicosis. The most common types of pneumoconiosis are the fibrotic forms of pneumoconiosis, comprising silicosis, coal worker's pneumoconiosis (CWP), and asbestosis(9). The condition is preventable; however, no specific treatment exists, although a small proportion of patients may receive a lung transplant

CASE REPORT:

41 year old male Worker in stone grinding factory(exposed to inorganic dust) since 20 yrs came with c/o cough with expectoration since 2-4 months which was associated with breathlessness on exertion and was insidious in onset lasting throughout day, productive which was associated with whitish discolouration present during early morning. It wasn't associated with any postural variation, hemoptysis, non blood stained, non foul smelling.

Patient also complains of breathlessness since 3-4 months which was insidious onset, Non progressive, MMRC Grade I not associated with orthopnea, diurnal variation. No Loss of

weight present, no c/o fever, no c/o chest pain, no h/o joint pain. Patient doesn't give any h/o recurrent chest infection. Patient is a not a known case of Diabetes mellitus, Hypertension, Tuberculosis , Bronchial asthma.

Past history:

H/o COVID 19 in 2020, admitted in ward for which non conservative management (no documentation available) was done.

On examination patient was vitally stable. On respiratory system examination fine inspiratory crepitations were present in left infra axillary area and infra scapular area . 6 minute walk test was performed and pre and post SpO2 were 99% and 97%. sputum for AFB and Tuberculin test were negative. Pulmonary function test was performed and was suggestive of Moderate Restrictive Disease. On routine Lab Investigations CBC, LFT, RFT, Serum Electrolytes, Serum Proteins were within normal limits.

USG A/P was s/o Grade 1 fatty liver, HRCT THORAX (Plain) was s/o Pneumoconiosis – most likely silicosis. 2D ECHO- Normal LV size and systolic function , LVEF 60% No RWMA, Aortic valve sclerosed, Grade 1 diastolic dysfunction, Trivial MR Trivial TR No PAH, AS and IVS Intact , No clot / vegetation/ effusion.

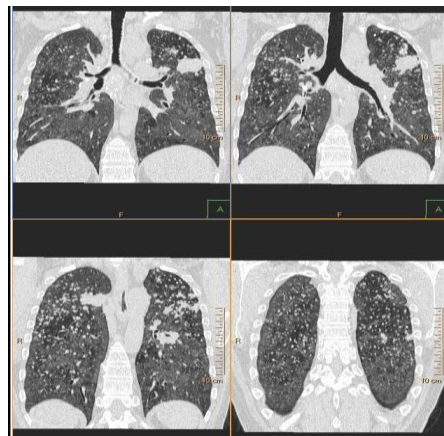
Patient was started on Inj AUGMENTIN 1.2gm IV 1-1-1, Tab AZEE 500mg p/o 0-1-0, Nebulisation with BUDECORT 1-1-1, Nebulisation with MUCINAC 1-1-1, Inj Pan 40mg IV 1-0-0, Inj EMSET 4mg 1-1-1.

Patient after 5 days of treatment showed improvement. Cough and Breathlessness both decreased, patient didn't complain of any fever spikes after 3 days of treatment. Patient was then discharged on Foracort inhaler 400 mcg 1-0-1. Patient comes for regular follow up and is vitally stable.

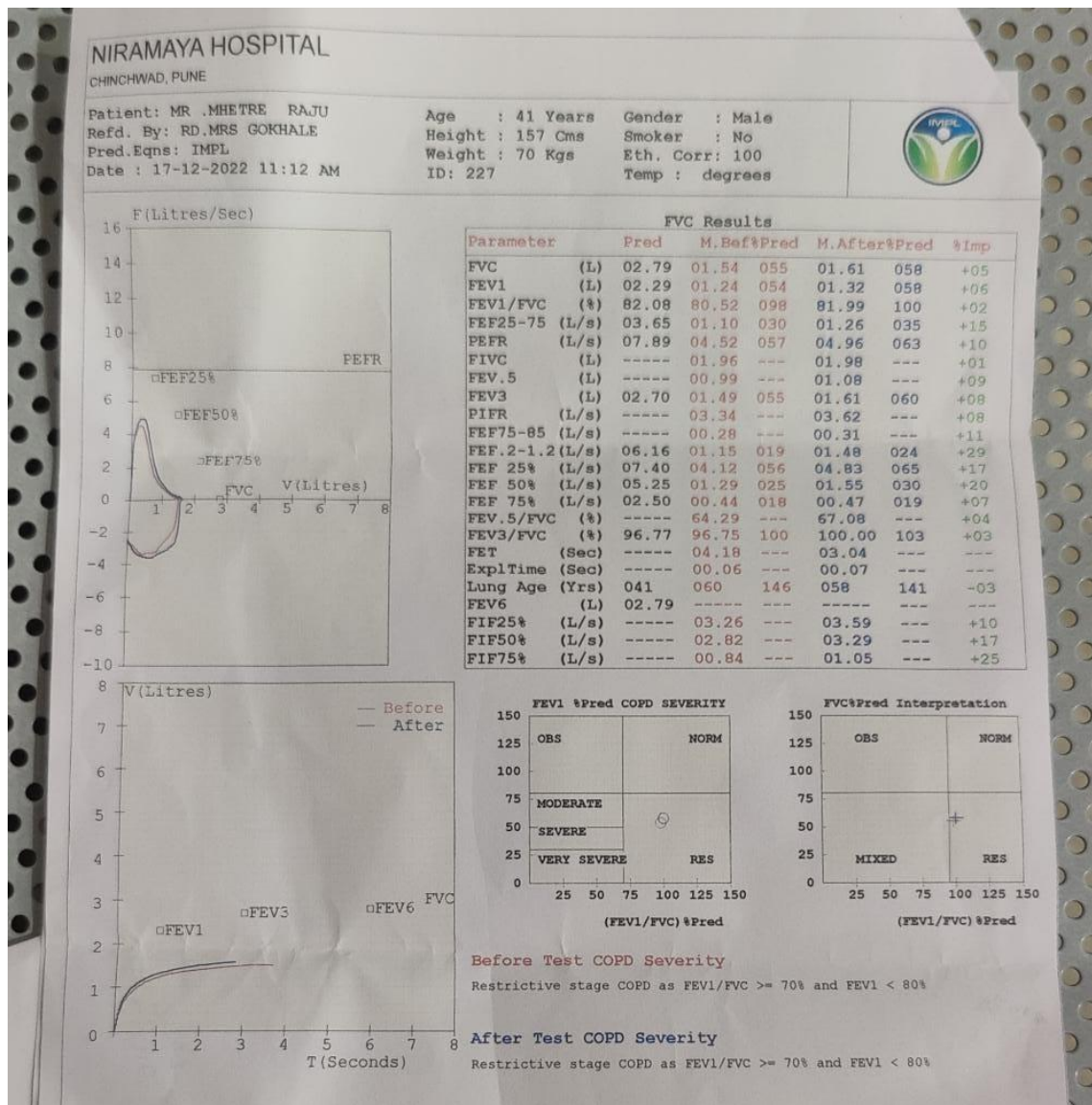
On regular follow up, after a month, the patient has now left his job at the stone grinding unit and his symptoms have decreased and patient is showing improvement.



Chest Xray suggestive of pneumoconiosis



HRCT suggestive of pneumoconiosis



Graph of the Pulmonary Function Test showing restrictive pattern.

DISCUSSION:

Our patient is a 41 yr old male with breathlessness on exposure to silica dust for around 20 years. According to Westerholm P.et al (3), exposure that lasted longer than 2 years after the earliest radiological abnormality was discovered increased the risk of illness development

compared to exposure that ended within 2 years after identification. The major indicators of the diagnosis are the traditional radiological findings, the progressive form of dyspnea, and the occupational history of exposure to silica dusts(4). The primary tools for respiratory surveillance of employees exposed to RCS include chest X-rays (CXRs), high-resolution computed tomography (HRCT), pulmonary function tests (PFT), and health and exposure surveys(10). When evaluating pulmonary anomalies, CT is a more sensitive and accurate approach than plain radiography due to its outstanding contrast resolution.(8). Our patient had progressive dyspnoea and had radiological evidence of pneumoconiosis. HRCT Thorax in our patient revealed changes suggestive of pneumoconiosis which aided in the diagnosis.

There is presently no known cure for silicosis, despite research into therapeutic approaches that aim to block the inflammatory mechanism of the disease.(5,6)

Various immunosuppressive treatments have produced different outcomes. Forced vital capacity (FVC) was found to improve by 300 mL in a research employing corticosteroids, however there was no long-lasting improvement or decrease in mortality.(7). Dyspnea and cough symptoms improved as well, albeit the advantages were linked to prolonged silica exposure. (7). Our patient showed significant improvement after corticosteroids via inhalational route were started for him.

Clinical Implications :

Silicosis has a clear, preventable, and manageable cause, although it begins slowly and duration is long. It is challenging to diagnose it early and treat it effectively. Due to the slow progression of the lung disease the disease is detected when it reaches the stage of fibrosis. However early detection by spreading awareness among the people at risk can help in improving the outcomes of the disease.

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