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Coal Worker's Pneumoconiosis Presenting as Miliary Opacities: A Diagnostic Dilemma

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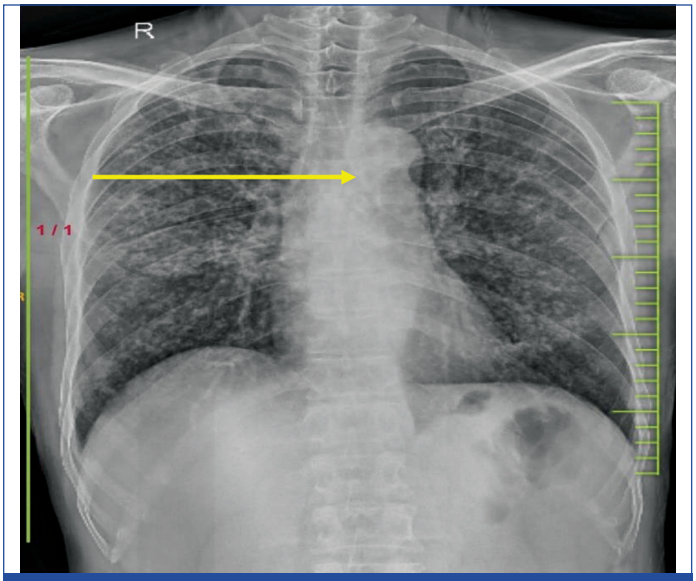
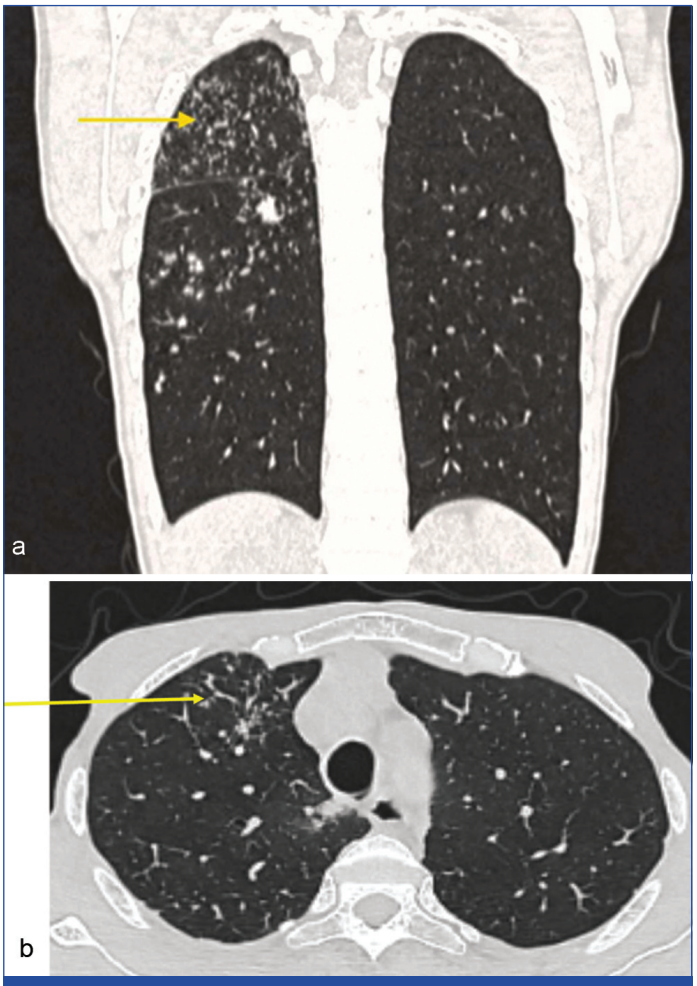
A 54-year-old male, with a smoking history of 10 pack-years and employed as a coal mine worker for 16 years, presented with complaints of intermittent cough for three years, dyspnoea on exertion Modified Medical Research Council (mMRC) score of II to III since one year, and a history of loss of appetite and weight loss around 10 kilograms over a period of six months. The patient denied any history of systemic co-morbidities. On general examination, the patient was conscious and oriented to time place and person and was vitally stable. On systemic examination, palpation findings within normal limits, percussion revealed resonant notes over all lung fields, and auscultation demonstrated reduced breath sounds in the right infraclavicular region.

Chest X-ray Posteroanterior (PA) view [Table/Fig-1] suggestive of bilateral miliary opacities. Differential diagnosis of tuberculosis, pneumoconiosis and sarcoidosis was considered [1,2]. Computed tomography of the thorax showed tree in bud appearance predominantly in the upper lobe [Table/Fig-2a,b] [3]. Sputum examination for acid-fast bacilli and Nucleic Acid Amplification Test (NAAT) was negative for *Mycobacterium tuberculosis*. Transbronchial lung biopsy demonstrated aggregates of pigmented macrophages [Table/Fig-3] providing strong evidence of pneumoconiosis and ruling out sarcoidosis [4]. A diagnosis of pneumoconiosis was confirmed. The patient was advised total avoidance of exposure to coal dust and was started on bronchodilators therapy comprising of a combination of Long-Acting Beta Agonist (LABA) and Long-Acting Muscarinic Antagonist (LAMA) namely indacaterol (150 µg) and glycopyrronium (50 µg), administered once daily via a dry powder inhaler for one month.

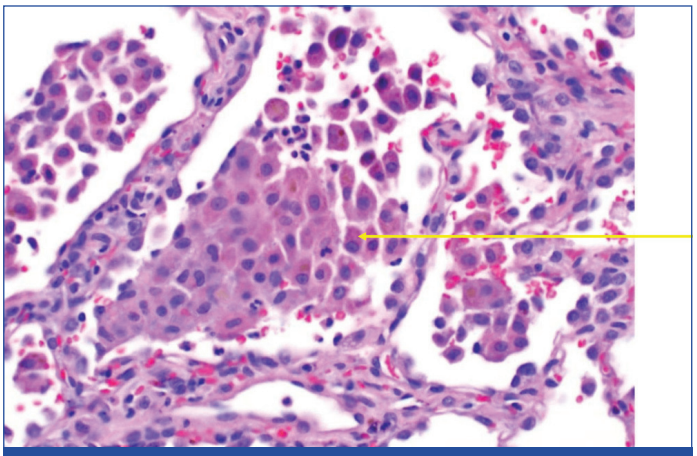
With a change in the nature of duty and use of the prescribed bronchodilators the patient showed clinical improvement, on



[Table/Fig-1]: Chest X-ray PA view showing bilateral miliary opacities.



[Table/Fig-2]: a) Computed tomography scan of the patient. Arrow marks miliary opacities predominance; b) Computed tomography scan of the patient. Arrow marks presence of tree in bud appearance.



[Table/Fig-3]: Haematoxylin and Eosin stain in 100x magnification showing presence of pigmented macrophages.

follow-up. He has been advised as needed (SOS) use of the said bronchodilators and regular follow-up.

Pneumoconiosis is an occupational lung disease caused by the inhalation of organic or non-organic dust, commonly air-borne in origin. Complete cessation of exposure is the mainstay of treatment [5].

The present case highlights its potential to mimic tuberculosis radiologically [2], underscoring the importance of a detailed occupational history and histopathological confirmation. Complete cessation of exposure to the causative factor is paramount in the management. The radiological classification of these diseases remains vital for surveillance and diagnosis [1].

REFERENCES

[1] International Labour Organization. Guidelines for the use of the ILO International Classification of Radiographs of Pneumoconioses, revised edition 2011 [Internet]. Geneva: International Labour Organization; 2011.
[2] Howlett P, Mousa H, Said B, Mbuya A, Kon OM, Mpagama S, et al. Silicosis, tuberculosis and silica exposure among artisanal and small-scale miners: A systematic review and modelling study. PLoS Glob Public Health. 2023;3(9):e0002085.
[3] Im JG, Itoh H. Tree-in-bud pattern of pulmonary tuberculosis on thin-section CT: Pathological implications. Korean J Radiol. 2018;19(5):859-65.
[4] Honma K, Chiyotani K, Kimura K. Silicosis, mixed dust pneumoconiosis, and lung cancer. Am J Ind Med. 1997;32(6):595-99. Doi: 10.1002/(sici)1097-0274(199712)32:6<595::aid-ajim4>3.0.co;2-p.
[5] Cohen RA, Patel A, Green FHY. Lung disease caused by exposure to coal mine and silica dust. Semin Respir Crit Care Med. 2009;29(6):651-61.

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