

CLINICAL IMAGES

Coal workers' pneumoconiosis with progressive massive fibrosis

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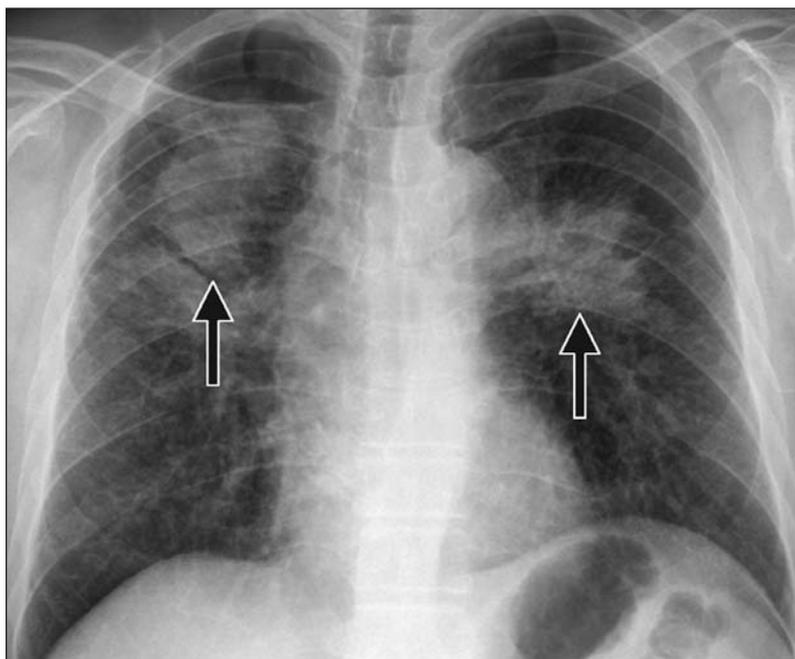


Figure 1: Chest radiograph in a 60-year-old coal worker showing bilateral mass lesions (arrows) in the upper lungs with fibrotic change. The “angel’s wing” appearance suggests progressive massive fibrosis.

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A 60-year-old man presented to the emergency department with a one-week history of coughing up blood. He had worked underground as an anthracite coal miner for about 25 years. Chest radiography (Figure 1) and computed tomography (CT) (Appendix 1, available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.111586/-/DC1) showed bilateral irregular masses in the upper lungs. In light of the patient’s occupation, his clinical presentation and findings on imaging, coal workers’ pneumoconiosis with progressive massive fibrosis was considered. Silicosis was excluded because he had no history of exposure to silica dust. Bronchoscopy showed active bleeding in

several segmental bronchi on the right and anthracotic change in the left upper and lingular lobe bronchi. No mass lesions were seen. Epinephrine was injected to stop the bleeding. Cytology of bronchial washings showed neither acid-fast bacilli nor malignant cells. Despite treatment with oral tranexamic acid, three episodes of hemoptysis occurred during two years of follow-up, requiring bronchoscopy with epinephrine injection on one occasion.

Coal workers’ pneumoconiosis can be categorized into a simple form and a complicated form. In the simple form, coal macules (nodular aggregations of coal dust and macrophages) contain solid anthracotic pigment without intervening fibrotic tissue. In progressive massive fibrosis, the complicated form, a fibrotic mass is formed by exuberant fibroblast activity¹ that tends to occur in the upper lobes of the bilateral lungs, showing an “angel’s wing” appearance on plain radiographs.² Classic CT findings in this form include bilateral irregular fibrotic masses with surrounding reticulations and pericatricular emphysema.²

The overall prevalence of coal workers’ pneumoconiosis among underground coal miners in the United States was 11.2% in 1970–1974 and 3.3% in 2005–2006.³ Predicted prevalence in coal workers can be estimated using Attfield and Moring’s exposure–response model, which includes the age of miners and exposure to coal dust.³

References

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