

# Synthetic cannabinoids as a cause for black carbonaceous bronchoalveolar lavage

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## DESCRIPTION

A 44-year-old woman with HIV (non-compliant to therapy), atypical mycobacterial infection and pneumocystis infection in the past, presented with subacute fever of 5-day duration. She also had a cough with productive yellow sputum that gradually turned into a dry cough. Physical examination was consistent with bilateral rhonchi and wheezes. She was an ex-smoker who had quit 10 years earlier, but was a current cocaine and cannabis abuser. Chest X-ray showed airway opacities on the right middle zone suggestive of pneumonia (figure 1). A CT scan of the chest showed scattered right middle lobe

nodular opacities (figure 2). Differential diagnosis included *Pneumocystis jiroveci* pneumonia, tuberculosis, non-tuberculosis mycobacterial infection and fungal infections such as histoplasmosis, cryptococcosis, blastomycosis and lymphoma. The patient's clinical, radiographic and histopathology was consistent with respiratory bronchiolitis-associated interstitial lung disease (RB-ILD).

Bronchoscopy revealed a normal airway, however, the bronchoalveolar lavage fluid was black in colour (figure 3). Transbronchial biopsies were also black. Histopathology revealed extensive intra-alveolar pigment laden macrophages and type 2 pneumocyte hyperplasia devoid of granulomas, eosinophils, malignancy or infection (figure 4).

RB-ILD is a type of idiopathic interstitial pneumonia that is classified as a smoking-related lung disease having the pathological features of respiratory bronchiolitis, clinical symptoms of cough and dyspnoea; high-resolution CT usually shows diffuse



**Figure 1** Chest X-ray showing airspace disease in the lower zones bilaterally.



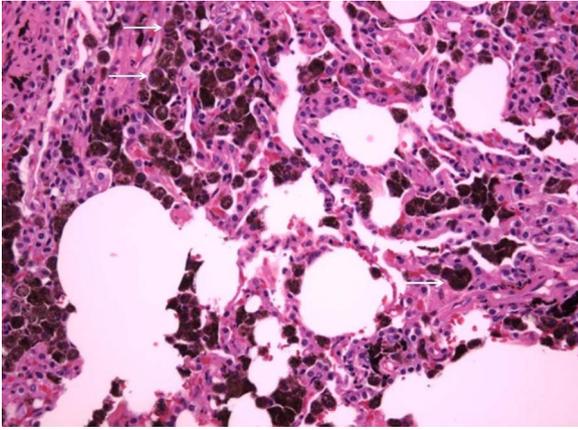
**Figure 2** CT of the chest demonstrates ground glass, nodular opacities in the right upper lobe anteriorly (marked with arrows).



**Figure 3** Bronchoalveolar lavage obtained from the lingula shows dark soot-coloured fluid.



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**Figure 4** Histopathological examination ( $\times 200$ ) of lung tissue demonstrates plenty of brownish-dark pigmented macrophages (arrows) and type-II pneumocyte hypertrophy and minimal fibrosis. This is classic for respiratory bronchiolitis-interstitial lung disease.

or patchy ground-glass opacities or centrilobular nodules and reticulation. Most often, pulmonary function tests suggest an obstructive pattern or a mixed obstructive and restrictive pattern with decreased diffusing capacity of the lungs for carbon monoxide. Treatment is smoking cessation. The condition is rarely life threatening.

### Learning points

- ▶ A black bronchoalveolar lavage is classically seen in heavy smokers.<sup>1</sup>
- ▶ Pulmonary complications may result from impurities inhaled during the process of cocaine smoking. We propose that synthetic cannabinoids can do the same by a similar mechanism.
- ▶ Although a type of interstitial lung disease, a severe degree of lung fibrosis requiring treatment is uncommon. Smoking cessation and, in our case, cessation of cannabis smoking, is the treatment for this condition.

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**Patient consent** Obtained.

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### REFERENCE

- 1 Lynn W, Kylstra J, Sahu S, *et al*. Investigations of black bronchoalveolar human lavage fluid. *Chest* 1977;72:483–8.

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