



Case report

A case of concomitant bronchial Anthracofibrosis and tuberculosis presented as asthma-COPD- overlaps syndrome (ACOS)

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ABSTRACT

Background: In this article we present a case of a 75-year-old nonsmoker woman who was misdiagnosed as asthma-chronic obstructive airway disease overlap. The patient's history, examination and investigation confirmed the diagnosis of tuberculosis (TB) and anthracofibrosis (AFB).

Our case demonstrates the difficulties that clinicians face with when patients present with chronic wheeze without any other specific symptoms at the outset.

1. Background

In this article we present a case of a 75-year-old nonsmoker woman who was misdiagnosed as asthma-chronic obstructive airway disease overlap. The patient's history, examination and investigation confirmed the diagnosis of tuberculosis (TB) and anthracofibrosis (AFB).

Our case demonstrates the difficulties that clinicians face with when patients present with chronic wheeze without any other specific symptoms at the outset.

2. Case report

A 75-year-old woman, farmer, nonsmoker from a rural area; with no history of TB, hay fever, eczema, food allergy or cardiovascular diseases. There is no history of exposure to asbestos or any other industrial dust except wood smoke. The latter was as the result of years of burning wood used for domestic chores and sold oak charcoals. There was no family history of TB or any other chronic lung diseases.

At presentation to respiratory clinic she described a two years history of wheeze and three months history of progressive breathlessness, productive cough, night sweating and some weight loss. Examination confirmed wide spread expiratory polyphonic wheeze. She had been previously treated with inhaled bronchodilators that conferred only modest response.

The patient underwent a number of investigations including blood biochemistry, sputum examination for culture and sensitivity and acid-fast bacilli (AFB), echocardiogram, CT scan of chest, spirometry and

bronchoscopy. We report the positive results as follow:

Erythrocyte Sedimentation Rate (ESR) of 88mm/h and CT scan showed narrowing of the right middle lobe bronchus with partial collapse of the right middle lobe and ipsilateral hilar lymph node enlargement (Fig. 1). Spirometry with reversibility confirmed fixed air-flow obstruction: FVC 1.87 L (80% of predicated), FEV1 1.14 L (62% of predicated), FEV1/FVC was 61% of predicated; FEF 25–75 was 42% of predicated. Bronchoscopy revealed patchy black pigmentation of bronchial mucosa and significant bronchial narrowing of right middle lobe bronchus (Figs. 2–4), endobronchial washing was strongly stained for AFB. Bronco-alveolar lavage showed none specific inflammatory cells but no cancer cells.

3. Treatment

The patient was commenced on a standard anti-TB chemotherapy regime (six months drug therapy with four drugs, Rifampicin + Isoniazid + Pyrazinamide + Ethambutol) during the first two months and at the last four months she received two drugs, Rifampicin + Isoniazid, plus supplementary diet and B6 pyridoxine 40 mg daily during the whole courses. This resulted in good response and optimized inhaler therapy for her airway obstructive symptoms.

4. Discussion

Our case an old woman, living in the village, was exposed to a heavy prolonged burning of hard oak charcoals. She had made coal for both

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Fig. 1.

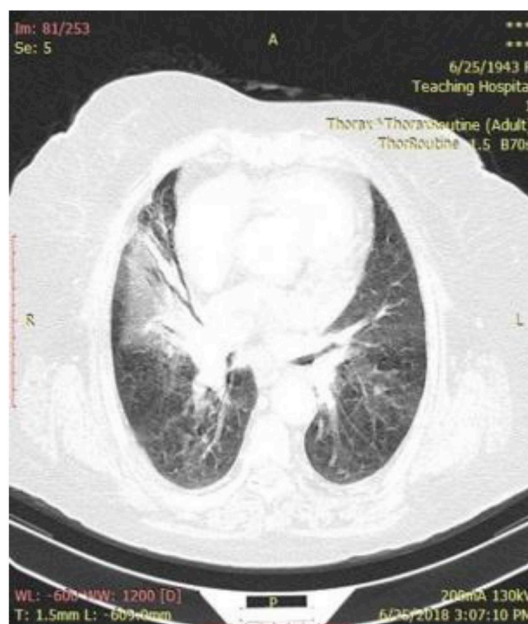


Fig. 3.



Fig. 2.



Fig. 4.

domestic use and for sale too. She made a charcoal using the mound method then stored it in small black plastic bags for later use and sale.

Anthracosis is the black discoloration of bronchial mucosa due to deposition of carbon-based particles in airway mucosa, usually related to chronic environmental exposures. It can eventually result in endobronchial and parenchymal fibrosis, a condition known as bronchial anthracofibrosis [1,2]. This condition is associated with obliteration of large and small airways and clinical manifestations resembling COPD [3].

In a serial of studies and case reports of 1320 patients with biomicroscopically confirmed BAF, elderly housewives in rural areas with prolonged exposure to biomass fuel were highly associated with tuberculosis (TB), COPD, pneumonia and malignancy.

The prevalence of BAF in the general population has been roughly estimated because the exact diagnosis of BAF requires bronchoscopy. The true prevalence of BAC is likely to have been underestimated, this mainly because its diagnosis requires bronchoscopy. Bronchoscopy is not part of standard investigation for the diagnosis of patients present with

obstructive airway symptoms and therefore some of these patients would be mislabeled as COPD or asthma(4). Available data from large series of patients who underwent bronchoscopy for other reasons have shown the frequency of BAF to be 3.4–21% [4].

BAF is not a usual bronchoscopy finding in the western countries, in one series of 7000 bronchoscopy 7 cases of BAC were reported [4]. BAF was not reported in Europe until 2008, and no cases had been reported in Spain until 2012. In contrast, the condition is more frequently found in rural areas of Asia, especially in Middle East and Far East countries [2].

Chest CT of our patient showed an abnormality in the right lungs and ipsilateral lymph adenopathy (Figs. 1–4). Similar CT findings in several studies and case reports showed the same narrowing of the anterior segmental bronchus of the right upper lobe and the right middle lobe bronchus with right hilar adenopathy [4,5], and usually right middle lobe is mostly affected and about 25% presented with right middle lobes syndrome [6,7]. High resolution Chest CT is often

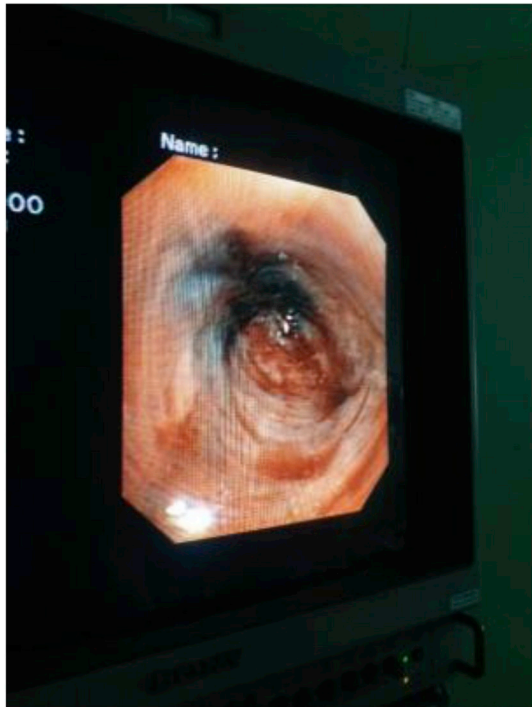


Fig. 5.

considered to be an important diagnostic tool of BAF [6] with high specificity and sensitivity [4].

Bronchoscopy (Fig. 5) revealed a patchy black pigmentation of bronchial mucosa, and significant bronchial narrowing especially at the level of right middle lobe bronchus which showed bronchial lumen narrowing. Other studies confirmed the diagnostic value of bronchoscopy [3,5,6], it is the gold standard for diagnosing BAF [4]. Bronchoscopy is the only investigation that allows direct visualization of the macroscopic changes affecting the bronchial lumen.

Our patient was also diagnosed with pulmonary TB. Among the eight studies on BAF, six studies showed a significantly higher frequency of TB (32.3%) in comparison to the control groups [3] and it has been reported in the same article, 37–40% which are the highest frequency of tuberculosis reported in BAF. TB associated with BAF and tuberculous endobronchial disease is generally reported more often in women than men [6]. It is not known if treatment of TB will result in improvement of the airway obstruction, when TB and BAF co-exist.

5. Conclusion

To conclude, this case showed the importance of looking for alternative diagnosis of asthma and COPD when there are doubts about the validity of the diagnosis. It's an important reminder that good exposure history taking remains an important aspect of comprehensive

assessment of patients with respiratory complaints. We learnt from this case that BAC and pulmonary TB can frequently co-exist, though there is evidence based explanation for this phenomenon. Further research should concentrate on the long-term implication of continued exposure to wood smoke in patient with BAC on their quality of life via regular clinical assessment and monitoring spirometry. Future studies should focus on understanding the reasons behind the relatively high incidence of pulmonary TB and BAC coexistence.

Conflicts of interest

No any commercial interest in this case.

Patient consent

Orally Obtained.

Author's contributions

Hadi Mohamad, collecting data and doing the procedure.

Kosar M.Ali, discussing the data and the case.

Kamran Karadaky, procedure supervisor, written the discussion, and abstract.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.rmcr.2019.100891>.

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