Pulmonary Arteriovenous Malformation: A Culprit of Middle Lobe Syndrome?

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Middle lobe syndrome (MLS) refers to lobar atelectasis and bronchiectasis and is either obstructive or non-obstructive type. A 63-year-old asthmatic female patient presented with recurrent pneumonia and unrelenting cough which proved to be due to pulmonary arteriovenous malformation that led to obstructive MLS. CT scan showed right middle lobe volume loss, bronchiectasis and dilated pulmonary vessels. The patient was operated for right middle lobectomy.

The pathological examination revealed pulmonary arteriovenous malformation with post obstructive changes. Pulmonary arteriovenous malformation should be part of the differential diagnosis of MLS and should prompt early referral for surgery. Middle lobe is anatomically susceptible to obstruction of the bronchus and to atelectasis due to its poor drainage and ventilation. Conservative treatment with antibiotics, bronchodilators, and chest physiotherapy are effective in 33.3 to 66.6% of patients. Lobectomy is required in a third of MLS patients who fail conservative management or have persistent symptoms that last more than 6 months or have malignant obstruction.


Middle lobe syndrome is a lung disease that presents mainly as lobar atelectasis and bronchiectasis; it is either obstructive or non-obstructive type. Obstructive MLS is due to endobronchial or extrinsic lesions, which could be inflammatory or neoplastic. Pulmonary arteriovenous malformation as a cause of MLS has not been widely reported. Although this rare diagnosis was reached postoperatively, pulmonary arteriovenous malformation should be suspected as a cause of MLS, especially if CT scan shows dilated pulmonary vessels in the proximity of lobar atelectasis and bronchiectasis. Lobectomy is recommended for this type of MLS.

The aim of this presentation is to report a case of arteriovenous malformation that led to obstructive middle lobe syndrome in an asthmatic patient.

THE CASE

A sixty-three-year-old asthmatic female was admitted with history of fever, cough and dyspnea. She had no history of hemoptysis, tuberculosis or weight loss. She was treated with antibiotics for right middle lobe pneumonia and was discharged after apparent improvement. The patient continued to suffer from wheezing and persistent cough for a few months. CT chest revealed volume loss of the right middle lobe with bronchiectatic changes consistent with long-standing obstructive process within its central tracheobronchial supply, see figure 1. Dilated pulmonary arteries were seen, which were initially assumed to be related to possible pulmonary hypertension.

The patient underwent right middle lobectomy. Gross pathology revealed middle lobe measuring 6.5 x 3.5 cm with dilated bronchi. Microscopic examination revealed collapsed alveolar space, intra-alveolar clusters of hemosiderin-laden macrophages and alveoli lined by respiratory and bronchial epithelium filled with inspissated secretions. Large dilated bronchi with surrounding mild chronic inflammation were seen, predominantly lymphocytes. An unusual vascular lesion displayed numerous thickened arteries and focal dilated venous structures, see figures 2 and 3.

The arteries were characterized with medial hypertrophy and intimal fibroplasia. Venous structures were also present near the pleural space and were dilated with focal intimal fibroplasia, see figure 4. Furthermore, numerous post-obstructive changes

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