Primary pulmonary mucosa-associated lymphoid tissue lymphoma with radiological presentation of middle lobe syndrome diagnosed by bronchoscopy: a case report

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Case report

In March 2018, a 49-year-old woman was admitted to our respiratory medicine ward with a 2-year history of recurrent productive cough. Symptoms first developed after the patient underwent laparoscopic myomectomy and subsequently developed a fever (around 38°C). Chest computed tomography (CT) revealed patchy opacity in the right middle lobe (Fig 1a and b). Based on these symptoms, she was diagnosed with "pneumonia" for which antibiotics were prescribed. Her fever resolved but cough persisted so she was prescribed cough suppressants

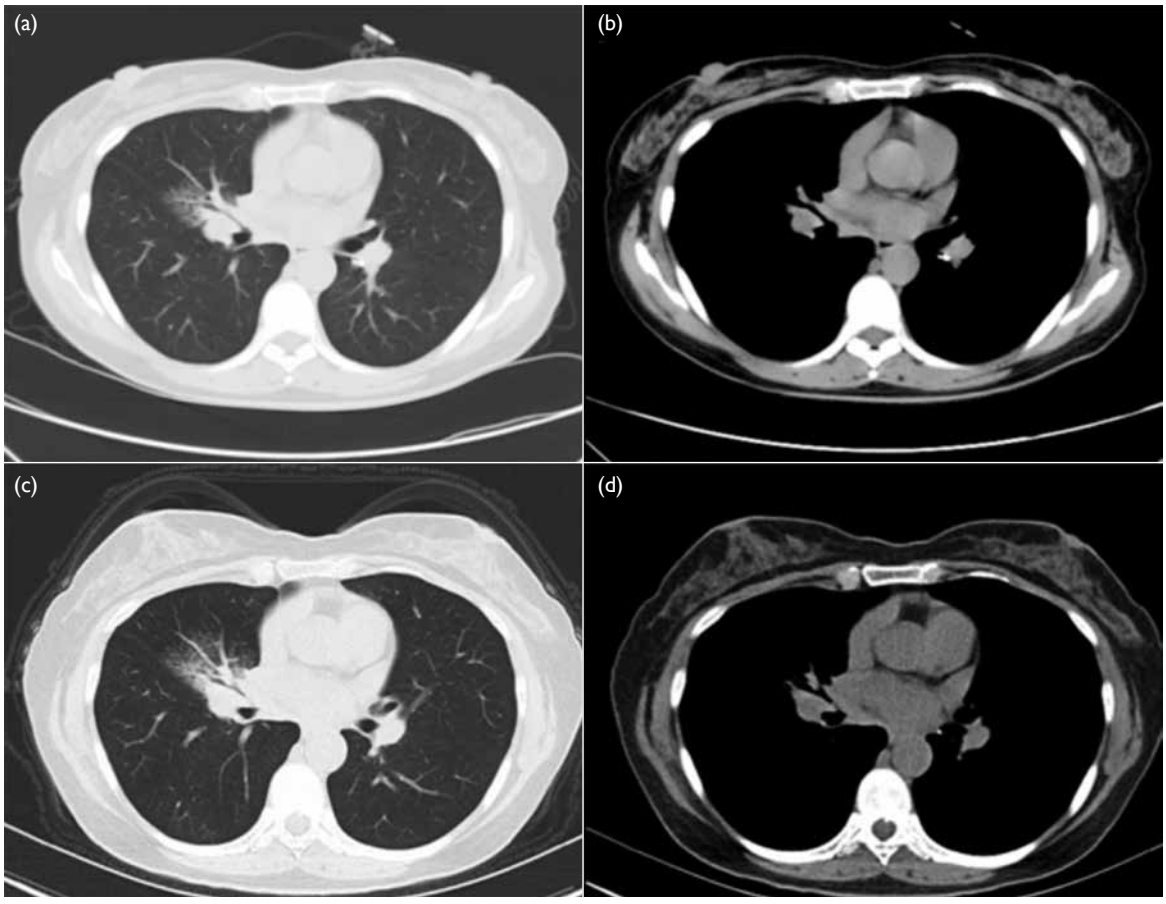

FIG 1. Chest computed tomography (CT) scan showing patchy opacity in the right middle lobe during onset. (a) Lung window. (b) Mediastinal window. Chest CT scan showing patchy opacity persisting in the same location 2 years later. (c) Lung window. (d) Mediastinal window

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and antibiotics intermittently. These therapies were likewise ineffective.

A series of tests and examinations conducted during hospitalisation revealed no definitive cause and symptoms again persisted. A new chest CT scan revealed no change to the right middle lobe opacity compared with previous CT scan and stenosis of the middle bronchus (Fig 1c and d).

In the absence of any treatment response, the patient was advised to undergo bronchoscopy that revealed a narrowed lumen and rough mucosa of the middle bronchus. Pathological examination of mucosal tissue biopsy from the lesion revealed infiltration of large numbers of lymphocytes (Fig 2a and b) suggestive of diagnosis of lymphoma. Further immunohistochemistry examination

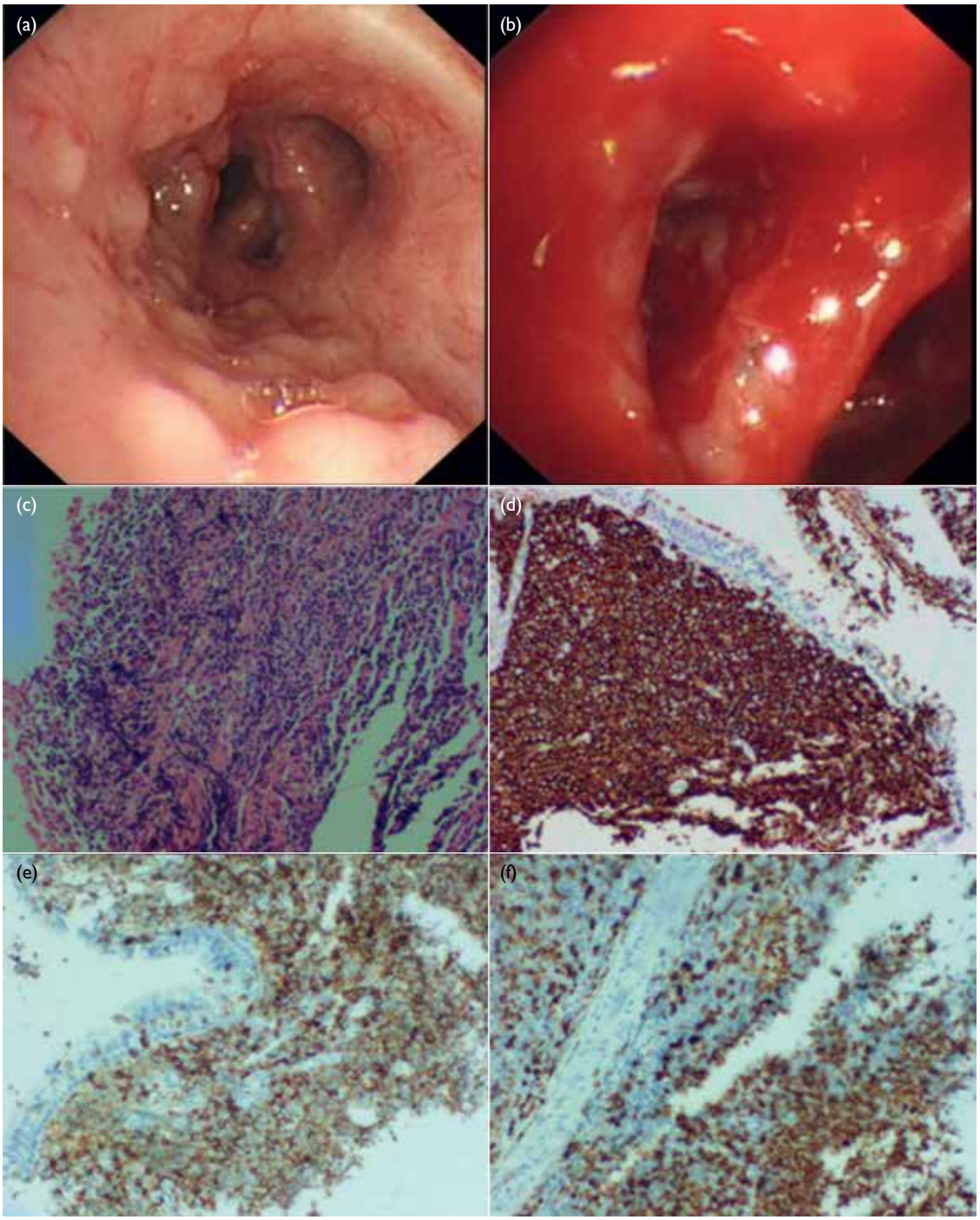

FIG 2. Bronchoscopic and pathological presentation of lesion in right middle lobe. (a) Bronchoscopic examination showing stenosis of the middle bronchus and nodular hyperplasia in the submucosa. (b) Hyperaemia and swelling change to the mucosa of the middle lobar bronchus. (c) Pathological examination suggested large numbers of lymphoma cells infiltrating the lesion. Immunohistochemical examination showing lymphoma cells were positive for (d) CD20, (e) CD43 and (f) CD79a

confirmed that the lesion was caused by mucosa-associated lymphoid tissue (MALT) lymphoma. These lymphoma cells tested positive for CD20, CD79a and CD43 (Fig 2c-f). Further examinations including positron emission tomography–computed tomography and gastroscopy revealed no evidence of lymphoma elsewhere.

The patient underwent radiotherapy about 6 months after final diagnosis, with a total dose of 3960 cGy. After the last radiotherapy treatment, chest CT confirmed that the lesion in the right middle lobe had nearly disappeared. In addition, symptoms of cough and expectoration had improved significantly. The patient was followed up once every 3 months. Chest CT scan at the most recent follow-up examination indicated no sign of relapse and her symptoms had resolved.

Discussion

Primary pulmonary lymphoma belongs to a group of lymphoproliferative diseases, and accounts for 0.5% to 1% of all pulmonary tumours.[1] Mucosa-associated lymphoid tissue lymphoma is the most common pathological type of primary pulmonary lymphoma.[2] However, the disease may not be diagnosed until pathological examinations are conducted due to a lack of clinical and radiological characteristics.

Previous study suggests that about half of patients with MALT lymphoma are asymptomatic and some are diagnosed by accident.[3] In patients with symptoms, respiratory symptoms are more frequently observed than B symptoms, including fever, fatigue and weight loss.[3] Our patient presented with a transient B symptom of fever, but a chronic respiratory symptom of cough.

The radiological presentation of this disease is diverse and includes nodules, masses, consolidation and group glass opacity. Multiple lesions, which are often bilaterally distributed, can be detected by CT scan in most cases, but a solitary lesion is less common in patients with MALT lymphoma.[4] In addition, MALT lesions may occur in any lung lobe or large airway including the trachea and main bronchus.[4,5] In our patient, the right middle lobe was affected, and middle lobe syndrome (MLS) was the major radiological feature.

Middle lobe syndrome was first mentioned several decades ago by Graham[6] to describe atelectasis of the right middle lobe. The syndrome is usually caused by extrinsic compression or intrinsic stricture of the middle lobe bronchus.[6] However, there is no uniform definition of this term. Broadly speaking, MLS is defined as damage to the right middle lobe due to any cause. The most common causes are bronchiectasis, non-specific inflammation, tuberculosis and tumours. Lung cancer is the most common type of tumour affecting the middle lobe. As a haematological disease, MALT lymphoma can affect any organ or tissue although in our patient, it affected only the right middle lobe with consequent misdiagnosis for more than 2 years. It is particularly rare for MALT lymphoma to present as MLS. Only one similar case has been reported: in 2004, Toishi et al[7] reported a 70-year-old male patient with a radiological change of MLS who was diagnosed with MALT lymphoma by right middle lobectomy. In our case, the final diagnosis was obtained by biopsy during bronchoscopy, not surgery.

Given that the clinical and radiological features of MALT are non-specific, its definitive diagnosis relies on pathology. Diffuse infiltration of small lymphocytes into the bronchiolar mucosa is a major histological characteristic. Moreover, reactive lymphoid follicles and lymphoepithelial lesions are commonly observed by microscopy.[4] The molecular markers of MALT are CD20, CD79a, CD43, as observed in our case. CD5, CD10 and cyclin D are always negative and may help to discriminate other types of lymphoma. It was difficult to distinguish this disease from infectious diseases and benign lymphoproliferative diseases in the absence of pathological examination.

Generally, MALT lymphoma is a tumour of low-grade malignancy and patients have a rather good prognosis. The 5-year survival rate for patients with MALT lymphoma is >80%.[4] The main treatments for the disease are chemotherapy, radiotherapy, target therapy and immunotherapy. Radiotherapy is the first choice in patients with localised lesions. It has been estimated that >90% of patients can achieve a complete response after radiotherapy.[8] Surgery may be indicated when the lesion is isolated in certain organs, such as lung, thyroid gland, and spleen. However, if MALT lymphoma progresses to an advanced stage, or patients have a high tumour burden, systemic therapy is recommended. Anti-CD20 combined with chemotherapy is considered first-line treatment.[7] In the present case, the patient refused chemotherapy and agreed to radiotherapy that relieved her symptoms with no obvious adverse effects.

In summary, we first report MALT lymphoma as a rare cause of MLS that was confirmed using a minimally invasive approach. Mucosa-associated lymphoid tissue lymphoma should be considered a differential diagnosis when investigating the aetiology of MLS.

Author contributions

Concept or design: H Zhou, S Wu.
Acquisition of data: Z Yang, S Wu.
Analysis or interpretation of data: H Zhou, Z Yang.
Drafting of the manuscript: H Zhou, S Wu.
Critical revision of the manuscript for important intellectual content: All authors.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

Ethics approval

The patient was treated in accordance with the Declaration of Helsinki. The patient provided written informed consent for all treatment and procedures and for publication of this paper.

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