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CASE REPORT

A patient with endobronchial BALT lymphoma successfully treated with radiotherapy

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Summary
Low-grade bronchus-associated lymphoid tissue (BALT) lymphoma is a rare tumour originating from the marginal zone of lymphoid tissue. It is a subgroup of B-cell extranodal non-Hodgkin's lymphoma with an indolent course. We report a case of this tumour with characteristic histologic feature. The patient had non-specific respiratory complaints. The tumour occluded the right bronchus intermedius. He received radiation therapy alone, resulting in complete remission of the tumour and disappearance of symptoms.

Case report

A 61-year-old previously smoker man was referred with a 3 months history of progressive cough. Besides a mild shortness of breath on exercise there were no other complaints. Physical examination revealed diminished breath sounds, coarse crepitations mainly on the right side of the chest, and a mild tachycardia. No lymphadenopathy was present.

Laboratory examination was normal except for a mild hypoxemia ($P_{O_2} = 8.2$ kPa).

The PA chest X-ray showed volume loss of the right lung and signs of atelectasis of the right lower lobe. Atelectasis of almost the entire right lower lobe was confirmed by computed tomographic (CT) scanning of the chest (Fig. 1). There was no tumour distinguishable from the atelectatic segments on the CT scan. Total body positron emission tomography with fluoro-deoxyglucose (FDG-PET) showed a high uptake on the right lower lung. No abnormal lymph nodes were detected by CT scan and FDG-PET.

Pulmonary function test results showed a mild expiratory flow limitation without reversibility and slightly decreased CO diffusion.

On fiberoptic bronchoscopy, the right bronchus intermedius was completely obstructed by an easily bleeding tumour.

Abbreviations: BALT, bronchus-associated lymphoid tissue; CT, computed tomography; FDG-PET, fluoro-deoxyglucose positron emission tomography; MALT, mucosa-associated lymphoid tissue

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Biopsy specimens showed B-cell lymphocytic infiltrate with marked epitheliotropism. Immunohistochemical staining with CD79a, CD20, CD21, and BCL-2 showed positivity on B-cells. CD10 and CD23 were negative (Fig. 2a and b). New biopsy specimens showed the same histologic feature. Bone marrow was not infiltrated by abnormal lymphocytes. The diagnosis of marginal zone small B-cell low-grade lymphoma of MALT-type (BALT lymphoma) stage IE was made.

The surgical resection was our first option. However, the extension of the tumour may have resulted in pneumonectomy of the right lung, which is a rather aggressive treatment for an indolent lymphoma with a favourable prognosis. Therefore, we decided to treat the patient with radiotherapy. A total dose of 30 Gy was given, resulting in total remission of the tumour.

After completing radiotherapy, bronchoscopy was repeated and apart from some intrabronchial adhesions in the right bronchus intermedius, no abnormalities were seen. All symptoms have been disappeared.

A chest X-ray and CT scan of the chest revealed some fibrotic changes perihilar on the right side, as a result of radiotherapy.

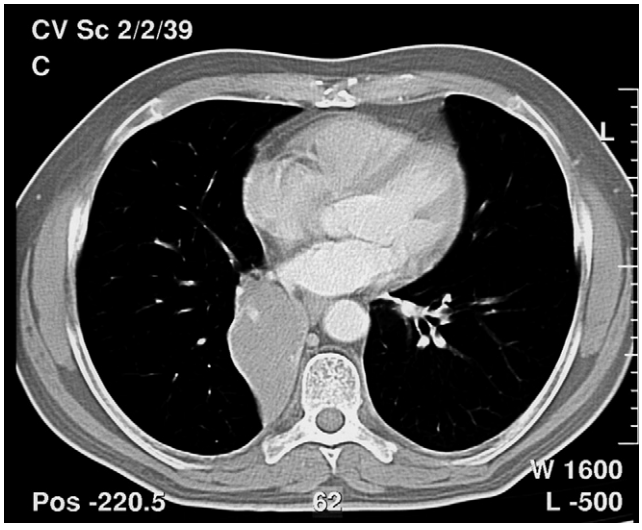

Figure 1 CT scan showing atelectasis of almost the entire right lower lobe.

No signs of recurrence are found so far, 4 years after radiotherapy.

Discussion

Primary pulmonary non-Hodgkin's lymphomas are rare. Indolent follicular or diffuse B-cell lymphomas are the most common type, and low-grade lymphoma of mucosa-associated lymphoid cells (MALT lymphomas) is the most common indolent subtype.[1,2] MALT lymphoma originates in the marginal zone of lymphoid tissue. The gastrointestinal tract is involved in more than two-third of the cases, but the lung is one of the most frequent non-gastrointestinal organs involved, here known as bronchus-associated lymphoid tissue (BALT) lymphoma.[3] Smoking is associated with increased expression of BALT in human lungs.[3] BALT might play a central role in antigen uptake, initiating immune response and disseminating primed lymphoid cells in the respiratory tract.[4] Its association has been described in the setting of chronic inflammation of the lung and various autoimmune diseases.[3] It has been postulated that chronic antigenic stimulation triggered by persistent infections or an autoimmune process leads to the aggregation of the lymphoids, which may eventually develop into the BALT lymphoma.[3,5] However, both the exact origin of the BALT lymphoma and the role of antigen in its clonal expansion are still not clear and the putative antigen responsible for it remains unknown.[3]

Clinical features of BALT lymphoma may include non-specific respiratory complaints and constitutional symptoms. Radiographic features are non-specific. Histologically, low-grade B-cell lymphoma of the BALT shows a relatively homogeneous lymphoid infiltrate with a diffuse and sometimes follicular infiltration pattern. These infiltrates are composed of small lymphocytes with slightly irregularly shaped, often indented nuclei with a narrow cytoplasm, seeming somewhat similar to centrocytes. The neoplastic lymphoid cells may invade the germinal centres or spread to surrounding tissue and invade the normal epithelium of the respiratory tract to create the characteristic lymphoepithelial lesion.[3]

The treatment of BALT lymphoma is controversial, ranging from observation only to surgical resection alone or in combination with chemotherapy or radiotherapy. Various chemotherapeutic regimens without surgical resection have been tried and reported with different outcome. When

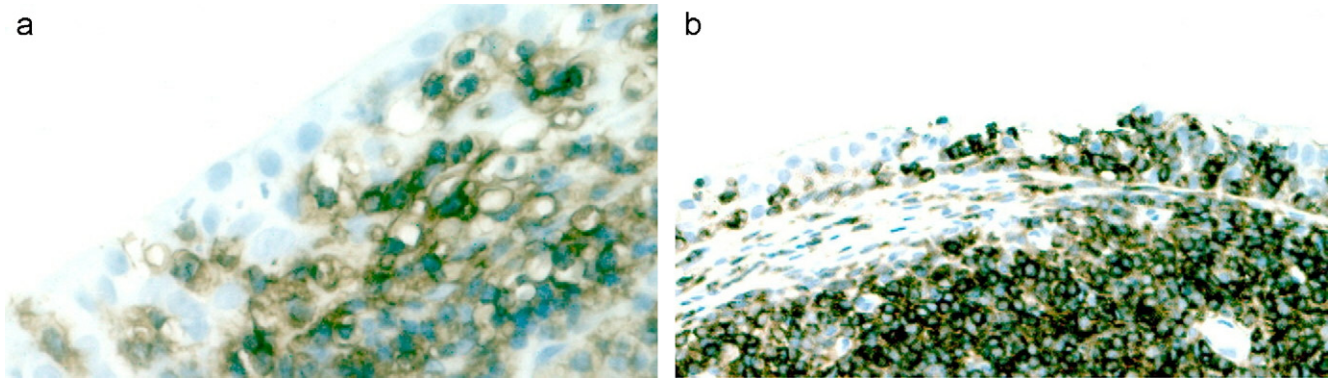

Figure 2 (a) B-lymphoid cells showing positivity with CD20 marker. (b) B-lymphoid cells showing positivity with CD79a marker. *Note*: High number of intra-epithelial lymphoma cells in the bronchus mucosa.

possible, surgical resection alone or in combination with chemotherapy or radiotherapy is associated with the most favourable outcome. However, as long as prospectively collected data concerning the long-term outcome for these patients are lacking, the optimal management strategy remains unclear.[2,3,6–8]

BALT lymphoma is reported to be associated with good prognosis and a favourable long-term survival.[3,9]

Our patient showed complete remission after radiotherapy alone. Radiation therapy may be a reasonable alternative to surgical treatment, when resection of a localized tumour is not possible or appropriate.

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