An 11 years delayed diagnosis of primary pulmonary diffuse large B cell lymphoma

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To the Editor: Diffuse large B cell lymphoma (DLBCL) is the major type of primary pulmonary lymphoma (PPL). DLBCL tends to have a poor prognosis, with 5-year survival rates ranging from 0% to 60%. But in this case report, an old male was pathologically diagnosed as pulmonary DLBCL with unchanged asymptomatic pneumonia-like imaging manifestations in lung for 11 years, which reminds us to pay attention to pulmonary DLBCL with an indolent course.

A 72-year-old male patient showed a long-term course of pulmonary DLBCL. Eleven years ago (in May 2007), the patient was admitted to hospital due to cough, expectoration, fever and patchy opacities, and consolidations in the right lung [Figure 1A]. After antibiotic treatment, the symptom resolved, but abnormal changes of lung computed tomography (CT) still existed. The patient refused the following bronchoscopic examination. With annual regular follow-up, unchanged opacities and consolidations in the right lung had been found for 11 years [Figure 1B and 1C]. One month ago, he got high fever, dyspnea, cough, sputum, fatigue. Dullness and moist rales in lungs and increased neutrophils in blood were found. *Escherichia coli* and *Aspergillus* were cultured in sputum. Lung CT showed remarkable progressive consolidations [Figure 1D]. Antibiotic and anti-fungal therapies were ineffective. So the patient took positron emission tomography (PET)/CT examination, which showed positive result with fludeoxyglucose concentration in right lung [Figure 1E]. Then he underwent transbronchoscopic lung biopsy examination in upper lobe of right lung and was pathologically diagnosed as pulmonary DLBCL (non-germinal). Immunohistochemical staining results: cytokeratin (CK; AE1/AE3) (−), chromogranin A (−), synaptophysin (−), CD56 (−), thyroid transcription factor-1 (−), NapsinA (−) and Ki67 positive predictive value (90%), CK5/6 (−), P40 (−), LCA (+), CD2 (−), CD3 (−), CD5 (−), CD10 (−), CD20 (+), CyclinD1 (−), CD79a (+), Bcl-6 (+), multiple myeloma oncogene 1 (+), Bcl-2 (+), and Epstein-Barr virus-encoded RNA (−) [Figure 1G]. After two courses of cyclophosphamide, adriamycin, vincristine, prednisone (CHOP) plus rituximab (RCHOP) chemotherapy, the symptoms were relieved and change in lung CT was improved obviously [Figure 1F].

PPL is defined as lymphoma only affecting the lung, without involvement of extra-pulmonary organs for at least 3 months after the initial onset or diagnosis. PPL accounts for 0.5% to 1.0% of lung neoplasms, and DLBCL accounts for the second majority (5%–20%) of PPL.[1] Immunosupression, immune deficiency, and some special occupational exposure are reported as risk factors of DLBCL,[1,2] but there was no special diseases history in this patient. In DLBCL, there is no gender preference and the age of onset range from 21 to 76 years, with median age of 57 years. Dyspnea, cough, and weight loss are common symptoms. Imagings of lung CT are diversity: nodular or mass-like involvement pattern, diffuse interstitial lung disease pattern, pneumonia-like consolidative pattern or mixed pattern. Mediastinal and hilar lymph nodes involvement are not frequent, even in patients with high stage of DLBCL.[3] PET/CT is helpful in staging and follow-up to monitor the change of illness. Five-year survival rate of DLBCL was reported as 0% to 60%, with higher relapse rate and rapid progress. However, Neri *et al*[4] reported that chemotherapy of CHOP increased the overall survival and progression-free survival of the patients with DLBCL. Recently, the application of rituximab has been reported to extend the survival of DLBCL. But the radiology treatment is not suggested. Obvious improvement had been shown in this patient after RCHOP therapy.

In this case, because the patient refused to receive invasive pathological examination, we first considered diagnosis as organizing pneumonia with acute severe pulmonary

Access this article online

Quick Response Code:

Website: www.cmj.org

DOI: 10.1097/CM9.0000000000000378

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Chinese Medical Journal 2019;132(16)
Received: 15-05-2019 **Edited by:** Xin Chen

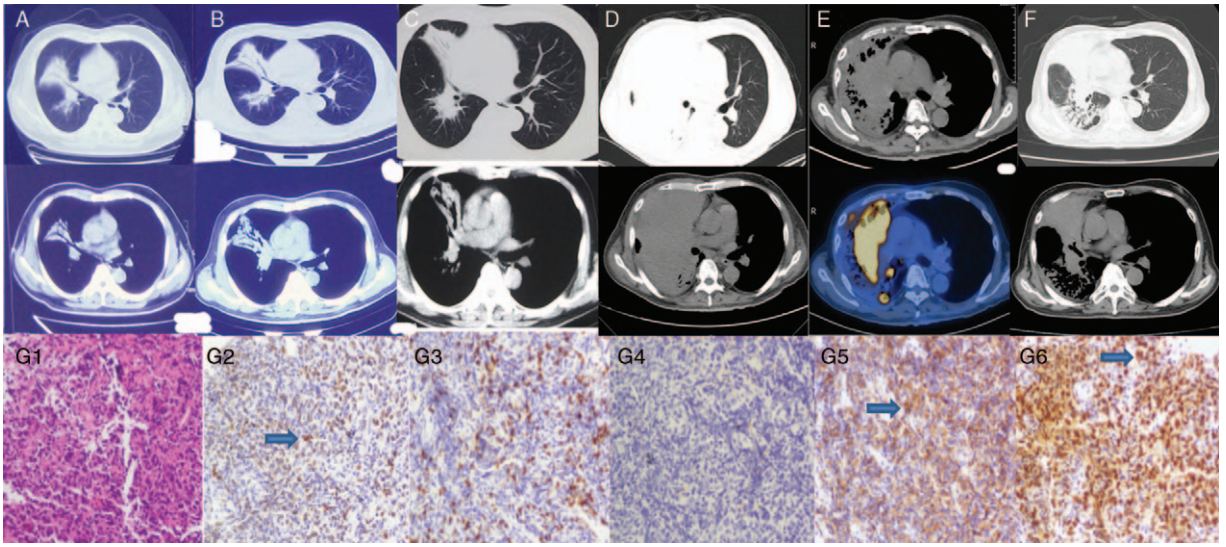

Figure 1: A 72-year-old male patient with a long-term course of pulmonary DLBCL. (A) Lung CT in May 2007 showed the opacities and consolidations in the right lung. (B and C) Lung CT in 2012 and 2017 showed no obvious changes. (D) Lung CT in 2018 showed progressive consolidations in the right lung; (E) PET/CT in 2018 showed the FDP concentration in right lung; (F) After two courses of RCHOP treatment, lung CT showed a significant improvement. (G) Pathological results (upper lobe of right lung; original magnification, ×20): lymphoid hematopoietic malignancy with hematoxylin-eosin staining (G1) and immunohistochemical staining (G2–G6): Bcl-6 (+)/CD3 (−)/CD10 (−)/CD20 (+)/MUM1 (+) (arrows). CT: Computed tomography; DLBCL: Diffuse large B cell lymphoma; FDP: Fludeoxyglucose; *MUM1*: Multiple myeloma oncogene 1; PET: Positron emission tomography; RCHOP: Cyclophosphamide, adriamycin, vincristine, prednisone plus rituximab.

infection because of the constant changes in lung CT for 11 years and a rapid progress in 1 month, with positive sputum culture of *E. coli* and *Aspergillus*. But ineffective anti-infective therapy and positive results from PET/CT urged us to take bronchoscope measurement. At last, the definite diagnosis of DLBCL was made. This report reminds us to pay attention to those cases that present with pneumonia-like imaging manifestations in lung with an indolent course.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Funding

This study was supported by grants from Science and Technology Research and Humanities and Social Science Research Planning Project of Jilin Provincial Education Department (No. JJKH20180223KJ) and Innovation Project of Health Family Planning Management Model in Jilin Province (No.2017G017).

Conflicts of interest

None.

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How to cite this article: Yu JY, Ma TG, Li YL, Ma L, Gao R, Liu J. An 11 years delayed diagnosis of primary pulmonary diffuse large B cell lymphoma. Chin Med J 2019;132:2000–2001. doi: 10.1097/CM9.0000000000000378