

Case Report

Primary mediastinal large B-cell lymphoma arising from thyroid in a renal recipient with Hashimoto's thyroiditis

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Abstract: Primary mediastinal large B-cell lymphoma is a subtype of diffuse large B-cell lymphoma, arising in the mediastinum from putative thymic B-cell origin with distinctive clinical and genetic features. Generally, primary mediastinal large B-cell lymphoma is believed as only deriving in the mediastinum. The current study presents a rare case of primary mediastinal large B-cell lymphoma which arising from thyroid in a renal recipient with Hashimoto's thyroiditis. Moreover, we devoted a discussion to the relationship among primary mediastinal large B-cell lymphoma, immunomodulatory therapy and autoimmune diseases. The immunologic derangement induced by long-term immunomodulatory therapy and Hashimoto's thyroiditis may be the possible cause for the ectopic lymphoma.

Keywords: Primary mediastinal large B-cell lymphoma, thyroid, organ transplantation, Hashimoto's thyroiditis, immunologic derangement

Introduction

Primary mediastinal large B-cell lymphoma (PMBCL) is a subtype of diffuse large B-cell lymphoma (DLBCL), arising in the mediastinum from putative thymic B-cell origin with distinctive clinical and genetic features. Generally, PMBCL is believed as only deriving in the mediastinum. We report a rare case of large B-cell lymphoma which arise in thyroid, have similar microscopic features and immunohistochemical markers to PMBCL, to raise the hypothesis that PMBCL can occurs in other organs, and abnormal auto-immune status may be the possible cause for the ectopic lymphoma. This study was approved by the ethics committee of the Second Xiangya Hospital of Central South University (Changsha, China). Patient provided written informed consent.

Case presentation

A 54-year-old Chinese male patient, who presented with increased neck mass and progressive dyspnea for one-month, was admitted to our hospital in March 2013. He received right kidney transplantation in 2002 on account of chronic renal failure, taking cyclosporin combined with mycophenolate mofetil for preven-

tion of rejection for eleven years. In 2010, he was diagnosed with Hashimoto's thyroiditis (HT). Blood analysis was shown to be within the normal limits except for significantly increased antithyroglobulin antibodies (>4000 lu/mL) and antimicrosomal antibodies (>600 lu/mL). Contrast-enhanced CT scan revealed a bulky moderately enhanced soft tissue neck mass (**Figure 1**). Following a frozen section diagnosis of malignancy, the patient was treated appropriately with surgical resection. The H&E stain of PMBCL typically showed infiltration of the neoplastic cells, which mostly large with irregular nuclei and moderate cytoplasm, is surrounded by collagen fibrosis (**Figure 2A** and **2B**). By immunohistochemistry, lymphoid cells showed that LCA+, CD20+ (**Figure 2C**), CD3, CD45+, CK- and expression of CD30 was present on focal (**Figure 2D**). Less than a month, a marked swelling of neck mass was discovered in this patient again. CT suggested recurrent neck and anterior-superior mediastinal mass involving the right oropharynx and carotid sheath, oppressed the trachea toward the left.

Discussion

PMBCL is an uncommon subtype of DLBCL arising in the mediastinum with distinctive clinical

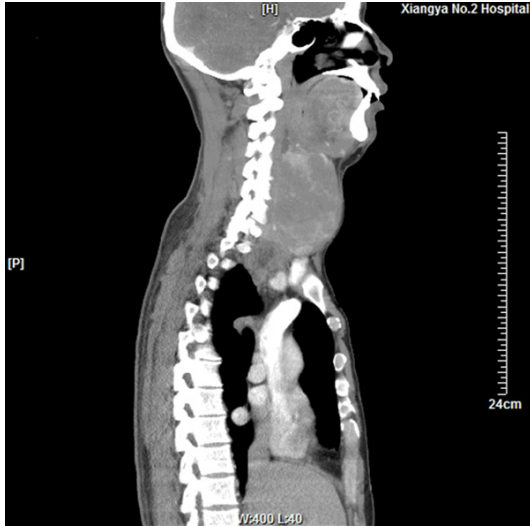


Figure 1. Contrast-enhanced CT scan revealed a bulky moderately enhanced soft tissue mass in the anterior neck.

and immunophenotypic features. Microscopic examination typically shows fibrosis with an infiltration of medium-sized to large lymphoid cells [1]. PMBCL express B-cell marks such as CD19 and CD20. Besides, in contrast to classic Hodgkin lymphomas, it is CD45-positive and CD15-negative. CD30 may be expressed in many cases but is usually weak and inhomogeneous [2]. Generally, PMBCL is seen as only arising in the mediastinum. There is only one case reports an extra-mediastinal counterpart of PMBCL arise in lung, raising the hypothesis that PMBCL can arise in sites outside of mediastinal [3]. In our case, radiological examination revealed that the lymphoma derivation from the thyroid, contain unique pathologic findings and immunohistochemical markers of a similar pattern have been observed in PMBCL, supporting the diagnosis of primary mediastinal large B-cell lymphoma arise in the thyroid and this is the first known case.

Renal transplantation is currently one of the best available treatments for patients with fatal kidney failure. However, suppression of the immune system by immunomodulatory therapy is considered to be responsible for the high incidence of post-transplantation malignancies. Post-transplant lymphoproliferative disorders (PTLD) is the name given to an unregulated expansion of lymphoid cells due to immunosuppression after organ transplantation. PTLD can involve any organ system throughout the

body, lymph nodes are most typically affected [4, 5].

However, although the development of DLBCL during the post-transplantation period of solid organs is well-known, this is the first case of PMBCL arise in thyroid. Owing to the extremely rare case of PMBCL occurred in extra-mediastinal, we infer that HT may be a probable cause for the ectopia of this particular PMBCL. There is no evidence that the HT definitely relate to organ transplantation, but some case reports suggest that there also have some kind of relationship between immunomodulatory therapy and autoimmune diseases [6, 7]. Regulatory T cells play an important role in tolerance against self-reactive T cells, however, long-term or intensive lymphocyte-depleting regimens can influence upon the proliferation of regulatory T cells, with an increased probability for the development of autoimmune diseases such as HT. And there are studies confirm the close association between HT and B cell lymphoma of the thyroid. Non-Hodgkin's lymphoma of the thyroid is rare, accounting for only 2% to 4% of thyroid malignancies and less than 2% of all extranodal lymphomas [8]. Associated Hashimoto's thyroiditis has been observed in more than 85% of thyroid lymphomas [9]. The high incidence of thyroid lymphoma in HT patients may be the main cause of lymphoma arisen in thyroid in this case.

In summary, Long-term immunomodulatory therapy can lead to immunosuppression which induced lymphoma and multiple tumors, may also cause autoimmune disease like HT. And the immunologic derangement caused by long-term immunomodulatory therapy and HT, may be the inducement of PMBCL arisen in thyroid. In future epidemiological investigation, for post-transplantation populations, particularly for long-term survivors, the development of rare neoplasias and the relationship between long-term immunomodulatory therapy, autoimmune disease and malignancy needs more attention.

Disclosure of conflict of interest

None.

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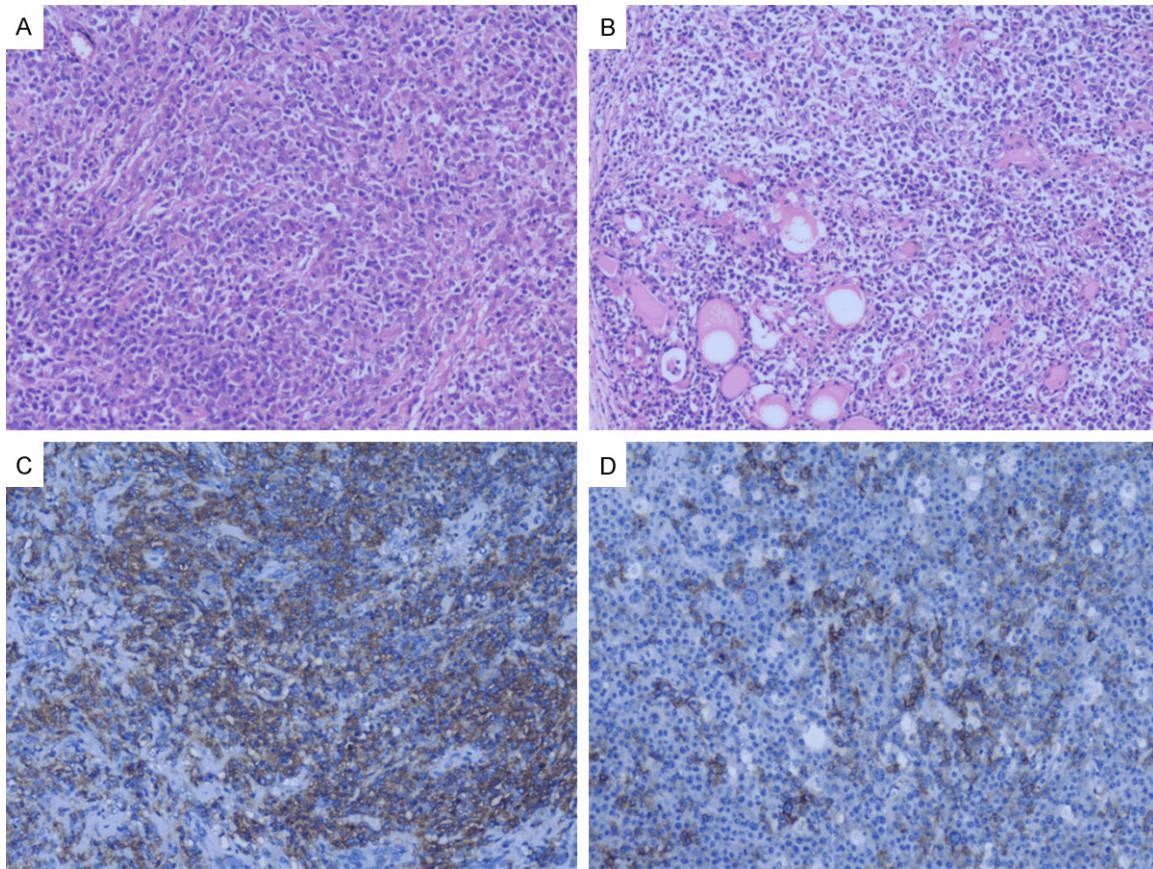


Figure 2. Histological and immunohistochemical analysis of the pathological tissue of the patient with PMBCL. A, B. Hematoxylin and eosin staining of the tumor tissue showed infiltration of the neoplastic cells, which mostly large with irregular nuclei and moderate cytoplasm, be surrounded by collagen fibrosis (magnification, x100). C. CD20+ lymphoid cells (immunostaining; magnification, x100). D. CD30+ lymphoid cells was present on focal (immunostaining; magnification, x100).

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