A Case of Resected Plasma Cell Type Castleman’s Disease with Intramediastinal Lymph Nodes Spread

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We report a case of resected plasma cell (PC) type Castleman’s disease (CD) in a 21-year-old female who had an anterior mediastinal mass with additional surrounding nodules. She was aware of low-grade fever and fatigue for several years. From hematological and biochemical examinations, elevated inflammatory responses and levels of serum IgG (2908 mg/dL) and IL-6 (22.2 pg/mL) were observed. She was diagnosed with PC type CD by needle biopsy under computed tomography (CT) guidance. It was thought that the lesion was localized in the mediastinum. Then, mediastinal adipose tissue including the tumor, additional nodules and thymus were removed. The histological findings of PC type CD were found not only in the main tumor but also in surrounding swollen lymph nodes. Her symptoms improved and inflammatory responses decreased after the operation. No recurrence has been observed for 5 years after the operation.

Keywords: Castleman’s disease, plasma cell type, local resection

Introduction

Castleman’s disease (CD) is a lymphoproliferative disorder first reported by Castleman and colleagues in 1954 from a patient with chronic fever and a mediastinal tumor.1 They subsequently reported 12 similar histopathological cases with mediastinal tumor and lymph follicle hyperplasia.2 There are three histological types: hyaline vascular (HV) type, plasma cell (PC) type, and a mixed type. HV type is characterized by vessel hyperplasia with hyalinization; PC type is characterized by plasma cell hyperplasia among follicles, while the mixed type is a mixture of HV and PC types.3 Clinically, localized CD is defined as swollen lymph nodes which are centralized in one part of the body. In multicentric CD, which Gaba and colleagues first reported in 1978,4 swollen lymph nodes are observed throughout the body. We report a case of resected PC type CD with intramediastinal lymph nodes spread.

Case Report

A 21-year-old female was referred to our hospital because an abnormal chest X-ray shadow was noted at her health checkup. She was aware of low-grade fever and fatigue for several years, but ignored these symptoms. Based on hematological and biochemical examinations, elevated inflammatory responses were observed (WBC: 5240/μL, platelets: 387000/μL, CRP: 10.89 mg/dL), and serum IgG (2908 mg/dl) and IL-6 (22.2 pg/mL) levels were also elevated. HIV antigen/antibody and HHV-8
were negative. Chest enhanced CT revealed a 45 mm × 20 mm eclipsed tumor mass in the left anterior mediastinum with clear boundaries. In addition, aggregated swollen lymph nodes (approximate width 5–15 mm) with similar contrast were found around the mediastinal mass (Fig. 1). Swollen lymph nodes were not found in other regions. $^{67}$Ga uptake was found only in the tumor mass. Needle biopsy under CT guidance was carried out and resulted in a diagnosis of PC type CD on immunohisto
gle examination.

The operation was performed under a video-assisted thoracoscopic approach in right lateral decubitus position. The procedure started with a 2 cm incision in the midclavicular line in the seventh intercostal space for thoracoscopy and with a 7 cm axillary incision in the fourth intercostal space as a utility incision. The tumor was found to exist in the anterior mediastinum and extended to the inside of left pleural cavity without pleural involvement (Fig. 2A). As the swollen lymph nodes were aggregated around the top of the tumor, we extirpated the anterior mediastinal adipose tissue including the thymus to remove the main lesion and all swollen lymph nodes around it, except the caudal border of the tumor, opposing right pleura, left brachiocephalic vein and left phrenic nerve as a border (Fig. 2B). The total operative duration was 285 minutes, and the total amount of bleeding was 20 mL. The extirpated specimen showed that the main lesion was a solid 40 mm × 18 mm tumor with very clear boundaries and many surrounding swollen lymph nodes. Histological examination revealed that the main lesion possessed lymph follicle hyperplasia with a fibrous capsule. The germ center looked normal. Hyperplasia and hyalinization of small blood vessels and many plasma cells with low grade atypia were observed around the outside of each follicle (Fig. 3). Histological diagnosis was PC type CD with the same histological findings in the lymph nodes around the main tumor but no such lesion in the thymus. Adjuvant therapy was not given because the values of CRP and serum IgG decreased after the operation. Taken together, these findings suggest that the tumor lesion had spread into multiple lymph nodes but the spread was localized in the mediastinum. The patient is now under follow-up observation with no recurrence for 5 years after the operation.

**Discussion**

This patient had an anterior mediastinal tumor with PC type CD, which are usually multicentric CD. These show elevated inflammatory responses suggesting that IL-6 production from enlarged plasma cells\(^5\) cause systemic symptoms. PC type CD has similar symptoms and findings as conditions such as malignant disease, autoimmune disease or inflammatory disease. Therefore, the final diagnosis should be based on pathological findings. Infection with human herpes virus-8 (HHV-8) was found in some cases of PC type CD. In Europe and the United States, multicentric CD often develops in relation to acquired immune deficiency syndrome (AIDS). This is because...
HHV-8 genome is considered to code for vIL-6, which is a human IL-6 homologue. Some reports say the prognosis of PC type CD with HHV-8 positivity is less favorable than that with HHV-8 negativity.  

Anti-inflammatory analgesics, steroids, immunosuppressive agents, and anticancer drugs are mainly used for multicentric CD. The availability of humanized anti-IL-6 receptor antibody for the type has also been reported recently. On the other hand, treatment for localized CD is usually surgical resection because of the benign properties of this type. Moreover, local resection is reportedly beneficial for localized PC type CD.

In our case, systemic symptoms and a high-level inflammatory response were caused by high levels of IL-6. The pathological diagnosis as PC type CD was obtained by preoperative biopsy under CT guidance. This case was not a typical localized CD because the lesion existed not only in the main lesion but also in the surrounding nodules around it. However, the operation was performed because seronegative findings with HIV or HHV-8 infections that are part of systemic disease have a low risk of recurrence and the lesion was localized only in the mediastinum on radiological examinations. It was very difficult to determine whether each lesion in this case arose...
multicentrically or metastatically from the main lesion. Adjuvant therapy was not given because symptoms improved and inflammatory responses decreased after the operation. Moreover, the patient is now under follow up without recurrence for 5 years. Thus, it was considered the lesion was localized within the resected area. These findings suggest that surgical resection is a potentially useful treatment modality, in which cases with a dominant lesion surrounded by a number of smaller satellites within the mediastinum can be cured.

**Conclusion**

We report a case of resected PC type CD with spread to intramediastinal lymph nodes. To date, the patient has shown a favorable prognosis. Because cases of localized resection with intramediastinal spread are rare, further analyses are required.

**Disclosure Statement**

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**References**