Multimodality Therapy for Large Cell Neuroendocrine Carcinoma of the Thymus
Naoko Ose, MD, Masayoshi Inoue, MD, Eiichi Morii, MD, Yasushi Shintani, MD, Noriyoshi Sawabata, MD, and Meinoshin Okumura, MD
Department of General Thoracic Surgery, Toneyama National Hospital, Osaka; and Departments of General Thoracic Surgery and Pathology, Osaka University Graduate School of Medicine, Osaka, Japan

A case of large cell neuroendocrine carcinoma of the thymus successfully treated with chemoradiation, followed by extended resection under cardiopulmonary bypass, is reported. A 44-year-old man diagnosed with thymic large cell neuroendocrine carcinoma received induction chemoradiation therapy (3 cycles of cisplatin/etoposide and 45 Gy of hyperfractionated radiation) because of invasion to the aortic arch and pulmonary trunk. After radiographic partial response was noted, a radical resection under cardiopulmonary bypass was performed. Pathologic examination revealed no viable cells in the tumor. The patient is alive 3 years later, without recurrence. Aggressive multimodality therapy could be an option for thymic large cell neuroendocrine carcinoma.


Large cell neuroendocrine carcinoma (LCNEC) of the thymus is a rare type of neuroendocrine tumor that has an extremely poor prognosis, and no standard treatment has been established. A patient with thymic LCNEC successfully treated with induction chemoradiotherapy, followed by radical resection under cardiopulmonary bypass, is reported.

Accepted for publication April 2, 2013.
Address correspondence to Dr Ose, Toneyama National Hospital, Department of General Thoracic Surgery, 5-1-1 Toneyama, Toyonaka-shi, Osaka 560-8552 Japan; e-mail: naokoose@toneyama.go.jp.

Fig 1. Radiographic images before treatment. (A) Chest computed tomography scan shows the anterior mediastinal tumor, 10.0 cm × 5.3 cm in size, invading the aorta and pulmonary trunk. (B) 2-[18F] Fluoro-2-deoxyglucose positron emission tomography–computed tomography shows significant uptake in the tumor.
epithelial tumors [1]. Moran and colleagues [2] reported that the 5-year survival rates of patients with thymic neuroendocrine carcinomas were 50%, 20%, and 0% for low-grade, intermediate-grade, and high-grade tumors, respectively. Tumor grade was determined according to histopathologic features, including growth pattern, cytologic atypia, and mitotic activity [2]. LCNEC of the thymus has a poorer prognosis than other neuroendocrine tumors because of the frequent distant and lymph node metastases [3]. A complete resection might contribute to long-term survival [4], whereas adjuvant therapy including radiotherapy or chemotherapy using cisplatin and etoposide is applied according to the regimens used to treat LCNEC of the lung [5, 6].

So far, 24 patients with thymic LCNEC have been reported in the Japanese literature. Among these, surgical resection was performed in 21 patients, of whom 3 and 9 underwent induction chemotherapy and adjuvant therapy, respectively. The prognosis was recorded in 13 patients, and of these, 5 patients classified as Masaoka stage IVb relapsed within 1 year after the operation. Among 4 relapse-free patients, 1 patient with stage I and 2 patients with stage III received adjuvant therapy. Cardillo and colleagues [7] reported 3 relapse-free patients who underwent radiotherapy after surgical resection, all of whom had Masaoka stage III disease. This indicates that complete resection and adjuvant therapy might contribute to long-term survival if the tumor is localized in the mediastinum without lymphatic spread.

Complete resection has been reported to contribute to good prognosis in patients with thymic cancer [8]. Therefore, a radical complete resection was performed under CPB without graft replacement of the aortic arch because there were, fortunately, no viable cancer cells at the site of direct invasion. However, CPB was necessary for sharp dissection of the aorta and pulmonary trunk from the tumor to avoid the fatal complication of uncontrollable intraoperative hemorrhage.

Only a few reports have described the use of induction therapy for thymic LCNEC. Two previous reports in the Japanese literature described the use of cisplatin plus etoposide for the treatment of thymomas. The
present report is the first describing the use of induction chemotherapy for thymic LCNEC using a regimen described for pulmonary neuroendocrine carcinoma. Histopathologic results after resection indicate that the regimen used to treat small cell lung carcinoma might also be effective for LCNEC of the thymus. Thus, histopathologic diagnosis of a percutaneous core biopsy specimen should be considered when choosing the treatment strategy in patients with invasive mediastinal tumor when a complete resection is initially impossible.

References


