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An Incidental Finding of Thymic Carcinoid during Urgent CABG Operation

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ABSTRACT

We present a case report of a 60-year-old Malay man who was undergoing an urgent coronary artery bypass graft (CABG) operation when a well encapsulated thymoma-like tumor was found incidentally. Total thymectomy was performed together with the CABG. Histopathological report of the tumor, however, confirmed a rare thymic carcinoid. The clinical features, management, and outcome of surgery are discussed.

INTRODUCTION

Thymoma is the most common tumor of the anterior mediastinum, and thymic carcinoid tumor has always been categorized in that group as a form of thymoma. However, in 1972 Rosai and Higa [1972] identified and described thymic carcinoid tumor as a separate entity. Thymic carcinoid tumors are rare; to date, about 100 cases have been reported in the literatures [Wang 1994] worldwide. Thymic carcinoids differ from thymomas in terms of cell origin, associated paraneoplastic syndromes, malignant behavior, and prognosis. Additionally, thymic carcinoid tumors differ from their aero-digestive counterparts with regard to their aggressive behavior and late recurrence, hence a new thymic neuroendocrine carcinoma nomenclature has been proposed [Klemm 1999].

CASE REPORT

This is a case of a 60-year-old Malay man who had a known history of hypertension, diabetes mellitus, and hyperlipidemia and in whom ischemic heart disease was recently diagnosed during a routine cardiology outpatient follow-up. An elective coronary angiogram was performed following positive results of an exercise test, and the angiogram showed a severe left main stem and triple vessel coronary stenoses. He was referred for urgent coronary artery bypass graft (CABG) following an unstable angina episode. Preoperative chest radiology did not show any mediastinal mass and the patient was asymptomatic.

Following median sternotomy, a well circumscribed 6 × 5 × 3 cm mass was found within the right lobe of the thymus. Macroscopically, the mass was well encapsulated and there were no features to suggest local extension to adjacent tissues. Additionally, there was no regional lymphadenopathy. The left anterior descending (LAD), the obtuse marginals (OM1 and OM2), and the right posterolateral (RPL) arteries were good-sized targets, although they were quite diffusely diseased. The aorta and the lungs were normal.

Total thymectomy was performed first, followed by coronary revascularization under cardiopulmonary bypass, during which the pedicled left internal mammary artery (LIMA) was grafted to the LAD and the saphenous vein grafted to the OM1, OM2, and RPL arteries. The CABG operation was successfully performed with a total cardiopulmonary bypass time of 120 minutes. The thymic specimen was sent for histology.

Postoperative recovery was uneventful and the patient was discharged to home on day 6 after surgery. Histology report of the thymic specimen showed clusters of cells with oval nuclei and numerous mitotic figures. Perivascular rosettes and comedonecrosis were noted. When special immunostaining was used, the cells showed positivity to chromogranin; hence, a thymic carcinoid tumor diagnosis was made (Figures 1 and 2, ◉). The resection margins were free of tumor and no lymph node involvement was found. Results of postoperative bronchoscopy was normal. Computed tomography (CT) scan of the thorax showed clear lung fields, normal liver, and no significant mediastinal lymphadenopathy. The patient was referred to the oncology team, who decided not to give any adjuvant therapy. An outpatient follow-up with a repeat CT scan of the thorax was planned and, at the time of this writing, the patient has been disease-free for 12 months.

DISCUSSION

Thymic carcinoid tumor (thymic neuroendocrine carcinoma) originates from the neuroendocrine cells (Kulchitsky cells), which are present in the thymus gland. About 95% of all carcinoid tumors are found within the aero-digestive system; 85% are found in the gastrointestinal tract and 10% in

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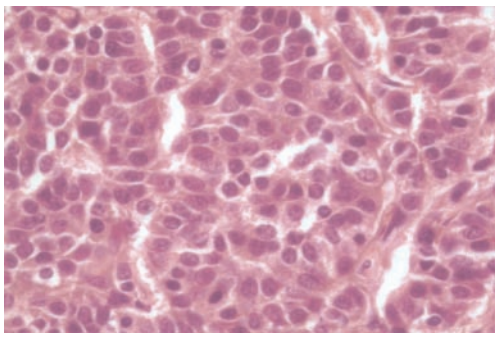

Figure 1. Section shows fairly uniform polygonal cells of thymic carcinoid tumor displaying round nuclei with finely dispersed chromatin (original magnification ×40).

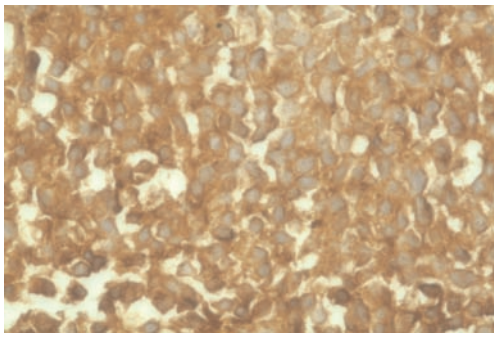

Figure 2. Immunostaining of the thymic carcinoid cells shows positivity toward chromogranin.

the lungs, although the thymic origin is considered an aggressive variant. Thymic carcinoids predominantly affect the male population, and 20% to 35% of the affected patients are found to have Cushing's syndrome [Wick 1980]. There are reports regarding the association of this tumor with medullary carcinoma of the thyroid [Clague 1991], although the tumor is rarely known to be part of multiple endocrine neoplasia (MEN) disease [Floros 1982].

Clinical presentation of the tumor includes cough, dyspnea, chest pain, and occasionally superior vena cava (SVC) obstruction, although nearly 30% of the tumors are asymptomatic [Moran 2000]. Radiological investigation, particularly a CT scan, is useful to confirm the features of the anterior mediastinal mass and is part of the staging procedure. Cytomorphologically, thymic carcinoid cells can be confused with small cell carcinoma, lymphoma, adenocarcinoma, plasmacytoma, or neuroblastoma.

Thymic carcinoid tumor prognosis is notorious: a bronchial carcinoid tumor that is node-negative has a 90% 5-year survival rate, but node-negative thymic carcinoid has only 31% 5-year survival rate [Economopoulos 1990, De Montpreville 1996, Fukai 1999]. At the time of surgery, thymic carcinoids show evidence of local invasion in 50% of reported cases, intrathoracic lymph node involvement in 40%, and distant metastases in 30% [Wang 1994] Complete surgical resection is the treatment of choice, although local recurrence is very common [Wick 1980, Economopoulos 1990, Wang 1994, De Montpreville 1996, Fukai 1999, Klemm 1999, Lardinois 2000, Moran 2000]. Fukai [1999] reported that, in a series of completely resectable tumors, distant metastases developed in 76.9% of the patients. Patients with good clinical outcome are those whose tumors showed low mitotic activity and minimal nuclear pleomorphism [Klemm 1999, Moran 2000]. TNM classification of this tumor is still controversial and other staging systems including histological staging are being used to determine the prognosis [Lardinois 2000]. Use of adjuvant radiotherapy and chemotherapy have been described, but there has been no large trial done so far to confirm their efficacy and added advantage.

CONCLUSION

Thymic carcinoid is an aggressive malignant neuroendocrine carcinoma that warrants complete surgical excision and meticulous follow-up. The use of chemotherapy and radiotherapy is indicated in recurrent or advanced tumors, although their adjuvant therapy role is still debatable.

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