An invasive thymoma complicated with airway stenosis causing sudden hypoxia during surgery

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Invasive thymomas are rare indolent tumors of the anterior superior mediastinum. The clinicopathological features that influence the survival of patients with this tumor are the subject of debate. Multimodal treatment programs including neoadjuvant chemotherapy, surgery, and postoperative radiotherapy have been proposed. Thymomas are often associated with autoimmune disorders and, most particularly, myasthenia gravis; this syndrome is present in approximately 30 - 65% of patients with thymomas.[1] It may affect the respiratory muscles, causing symptoms that vary from dyspnea on severe exertion to dyspnea at rest.[2] In this case, however, bronchoscopy and chest computed tomography (CT) revealed that airway stenosis was responsible for the respiratory symptoms and deadly hypoxia during the operation.

A 32-year-old male started to have dry cough and dyspnea 2 months prior to admission. A chest x-ray showed a bulging mass-like lesion of 6 cm in diameter over the right paratracheal space. Physical examinations showed normal breathing sounds, with no heart murmur. A chest CT showed a circumscribed heterogeneous mass over the anterior mediastinum. The superior vena cava, left brachiocephalic vein, and left main bronchus was compressed by the mass, which had unclear fatty plane with neighboring structures (**Figure 1**). The differential diagnosis included thymoma, malignant germ cell tumor or primary mediastinal lymphoma. The laboratory data of tumor markers were unremarkable. The results of anti-acetylcholine receptor antibodies and repetitive nerve stimulation test were normal. An excisional biopsy of tumor was performed, and was diagnosed as invasive Masaoka stage III thymoma. He received neoadjuvant chemotherapy of 3 weekly cycles of cisplatin (75 mg/m^2 on day one), epirubicin (100 mg/m^2 on day 1), and etoposide (120 mg/m^2 on day 1, 3 and 5) every 3 weeks. There was no significant improvement, and a median sternotomy with extended thymothymectomy was arranged. Hypoxia with a sudden blood pressure drop occurred during the operation when he was in supine position, with ventilation of the left lung. The emergency flexible bronchoscopy revealed a left main bronchus compression. The symptoms subsided after management with ventilation of both lungs. Respiratory symptoms of dry cough and dyspnea were greatly improved by the surgery. The bronchoscopy and chest CT follow-up showed that the left main bronchus compression had been relieved after tumor resection. His recovery was uneventful and a postoperative radiotherapy was prescribed.

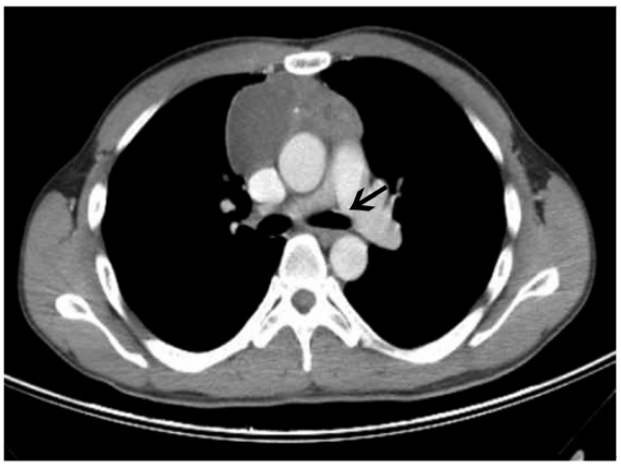

Figure 1 - Chest computed tomography scans showing circumscribed heterogeneous mass in the perivascular space of the anterior mediastinum. There was mild compression with deformity of left main bronchus (arrow) by the mass.

Thymoma is an epithelial malignancy arising from the thymus gland, accounting for nearly half of all primary tumors of the anterior mediastinum.[3] They are usually encapsulated and benign but some invasive or malignant thymomas, which show all the clinical, morphologic, and cytological attributes of encapsulated thymomas, exhibit local invasion, pleural or pericardial implantation, or distant metastases. There is a consensus that a complete resection should be performed, whenever possible, in patients with malignant thymomas. In cases of stage I or II tumors, this is generally achieved without difficulty, but cases of stage III or IV tumors are more challenging. Our patient had a stage III thymoma that had invaded the neighboring vessels and adhered firmly to the heart, and we performed an extended thymothymectomy successfully. Patients with thymoma may have common symptoms that include chest pain, cough, dyspnea, dysphagia, hoarseness, and superior vena caval obstruction. In this case the patient had no myasthenic symptoms of general muscle weakness, fatigue, or ptosis, but he indeed had progressed dyspnea. The results of neurologic examinations were normal. The specificity of anti-acetylcholine receptor antibody test for both ocular and generalized myasthenia was generally excellent. Both positive and negative test results are extremely useful for the diagnosis of generalized myasthenia.[4]

Huge thymoma causing acute dyspnea had been reported sporadically.[5] We conclude that the association

between respiratory symptoms with lethal hypoxia and invasive thymoma in this case was well documented by flexible bronchoscopy and chest CT. A detailed airway evaluation in invasive thymoma management, even if the tumor size was not large, is advised to avoid potential hypoxia.

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References

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