



THE ANNALS OF THORACIC SURGERY



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Ann Thorac Surg 2003;76:293-295

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Print ISSN: 0003-4975; eISSN: 1552-6259.

in similar cases in ruling out occult primaries or other unexpected secondary lesions.

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Mucosa-Associated Lymphoid Tissue Lymphoma of the Thymus Resected Using Combined Thoracoscopic and Transcervical Approaches

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Mucosa-associated lymphoid tissue (MALT) lymphoma is a low-grade variant of B cell lymphoma that arises in extranodal tissue of the gastrointestinal tract, lung, salivary gland, thyroid, or other organ derived from the foregut. However, MALT lymphoma in the thymus is extremely rare. We report a case of thymic MALT lymphoma, extending to the neck, resected using combined thoracoscopic and transcervical approaches. To the best of our knowledge, thoracoscopic management of MALT lymphoma in the thymus has not previous been reported.

(*Ann Thorac Surg* 2003;76:293-5)

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Accepted for publication Nov 25, 2002.

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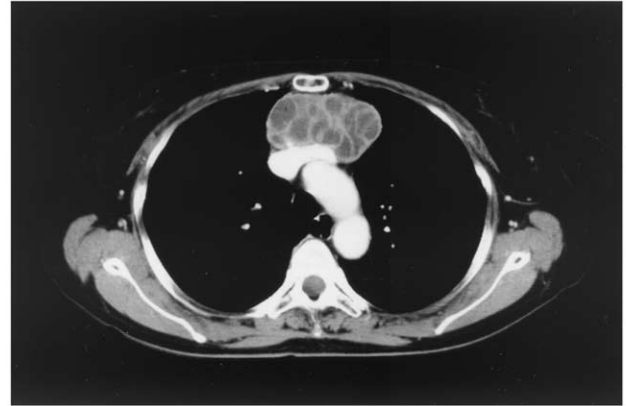


Fig 1. Computed tomography reveals an anterior and superior mediastinal mass with solid and cystic portions.

Mucosa-associated lymphoid tissue (MALT) lymphoma is a low-grade variant of B cell lymphoma that arises in extranodal tissue of the gastrointestinal tract, lung, salivary gland, thyroid, or other organ derived from the foregut. Mucosa-associated lymphoid tissue lymphoma tends to grow locally, remain clinically indolent, and respond well to surgery [1]. Mucosa-associated lymphoid tissue lymphoma of the thymus, which is extremely rare, has been excised through median sternotomy or thoracotomy in all previously reported cases [1-6]. We report a case of thymic MALT lymphoma resected by video-assisted thoracoscopic surgery (VATS) combined with a transcervical approach.

A 46-year-old woman with Sjögren's syndrome was found to have a large anterior and superior mediastinal tumor by an annual radiographic examination of the chest. Her only symptom was a dry eye, and no lymph nodes were palpable.

Computed tomography (CT) of the chest revealed a follicular cystic tumor in the anterior and superior mediastinum, extending to the lower end of the thyroid gland, without lymph node enlargement (Fig 1). All laboratory tests were normal.

For access to the cervical and mediastinal aspects of the tumor, we planned to combine transcervical and video-assisted thoracoscopic surgery (VATS) approaches under single-lung ventilation anesthesia. We placed the patient in a 10° semileft-lateral position with her neck extended. A 3-cm-long transverse incision above the sternal notch exposed the cervical end of an encapsulated tumor, with no involvement of surrounding tissues. After mobilizing the upper part of the tumor using electrical cautery and finger dissection, we performed a videoscopic approach with three flexible thoracoports (7-, 10-, and 10-mm diameter) in the right chest. The chest mass was a grayish, encapsulated, multicystic tumor occupying the anterior and superior mediastinum, without involvement of pulmonary tissues. Tumor dissection proceeded cephalad, and from right to left. Two thymic vessels were clipped and divided, and the tumor was completely

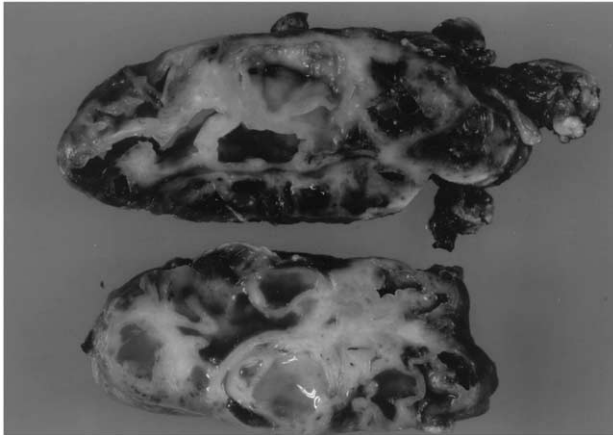


Fig 2. Cut surface of the tumor is yellow-white and solid with multiple cysts.

dissected through the three access ports. One of the port wounds was extended to 5 cm in length, and the specimen was removed in an extraction bag. No chest tube was placed.

The tumor measured 17.5 × 6.5 × 3.0 cm, weighed 120 g, and had solid cut surfaces with multiple cysts (Fig 2). The histologic appearance and immunohistochemical staining were consistent with MALT type of B cell lymphoma of the thymus (Fig 3). The tumor was confined within the thymus and showed no microscopic invasion of surrounding tissues. Bone marrow aspiration, gallium scintigram, and abdominal CT, were negative. There was no evidence of recurrence 6 months after resection.

Comment

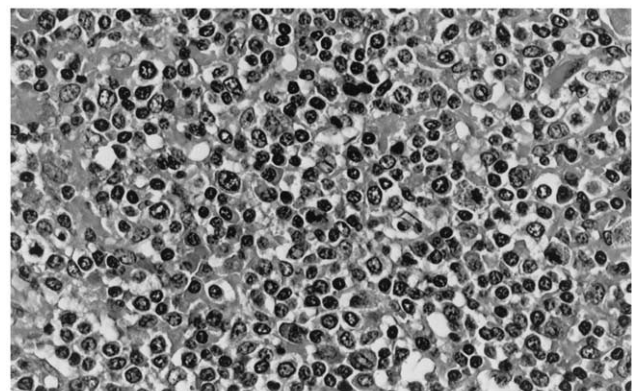
Isaacson and associates first reported two cases of MALT lymphoma of the thymus in 1990 [1]. Only a few cases have been described, mostly in women of middle or advanced age, and the tumors were low-grade B cell lymphoma that remained clinically silent even when large, as in our patient [1-6]. Mucosa-associated lymphoid tissue lymphoma often occurs in patients with a preexisting autoimmune condition, such as Sjögren's disease, rheumatoid arthritis, or hyperglobulinemia. Isaacson and associates reported that the histologic features of the lymphoproliferative lesions in thymic MALT lymphoma closely resemble those of the myoepithelial sialadenitis in Sjögren's disease [1]. However, the causal relations between thymic MALT lymphoma and Sjögren's disease remain unclear.

Thymic MALT lymphoma characteristically appears on CT as a mediastinal mass with solid and multiple cystic portions [3]. These findings are not specific for thymic MALT lymphoma; the differential diagnosis includes thymic lymphoma of Hodykin's, lymphoblastic, and high-grade B cell types. However, thymic lymphoma usually causes mediastinal lymph node enlargement, and isolated thymic involvement is rare [7].

The optimal treatment for a mediastinal mass of un-



A



B

Fig 3. (A) Architecture of thymus destroyed by a dense lymphoid cell infiltrate, with scattered Hassall's corpuscles (hematoxylin & eosin, ×40). (B) Infiltrating lymphocytes are slightly larger than small lymphocytes, with moderately irregular nuclei (hematoxylin & eosin, ×400).

known cause is surgery, both for diagnostic and therapeutic purposes. Diagnosis is made after surgery, because immunohistochemical stainings are inconclusive at the time of surgery. Our patient had a tumor in the anterior and superior mediastinum with a clear boundary seen on CT. Thus, VATS resection appeared possible. However, the tumor also extended to the lower neck. We expected that the surgical field in the upper aspect of the superior mediastinum, especially above the left innominate vein, would be difficult to reach using a VATS procedure. Thus, for access to the lower neck, we began with a 3-cm-long transcervical incision. Had we found tumor invading the surrounding tissues, we could have proceeded with a median sternotomy. However, the tumor was fully encapsulated. Combining the transcervical approach with VATS allowed complete dissection of this anterior and superior mediastinal tumor that extended to the lower neck. Patients with thymic MALT lymphoma usually have a favorable prognosis. However, in two reported cases, the patients developed tumor simultaneously in a second organ (stomach and salivary gland), and 1 patient pursued a rapidly fatal course in

spite of chemotherapy [5, 6]. Thus far, our patient has not demonstrated any such distant involvement.

The 6-month follow-up period of our patient has been too short to fully judge the effectiveness of our surgery, which combined thoracoscopic and transcervical approaches. However, the encapsulated nature of the tumor, absence of invasion, and our apparent complete resection support the feasibility of VATS in managing even a large thymic MALT lymphoma.

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