Thymolipoma. A Report of Nine Cases, with Emphasis on Its Association with Myasthenia Gravis

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Abstract

Purpose. Thymolipomas are rare tumors of the anterior mediastinum accounting for up to 9% of all thymic tumors. These tumors are associated with autoimmune diseases in up to 50% of the patients, including myasthenia gravis, aplastic anemia, hypogammaglobulinemia, lichen planus, and Graves’ disease. These tumors with a fatty appearance also can arise in older patients with autoimmune disease.

Methods. This retrospective study evaluated the thymolipomas from nine patients at a single institution, which were resected between 2002 and 2007. The clinical data as well as radiologic findings were evaluated, together with the follow-up.

Results. Seven patients initially presented with myasthenia gravis, and therefore they underwent a resection of the thymus, even though imaging techniques did not reveal a tumor in any of the cases. Another patient showed no symptoms of autoimmune disease for 20 years, and though cardiomegaly was suspected, further investigation revealed a thymolipoma. The symptoms of myasthenia gravis improved following the surgery in one patient. During follow-up, one patient died due to esophageal cancer, and the remaining patients are alive without recurrence.

Conclusions. Thymolipomas are benign tumors that show an excellent outcome. Patients with autoimmune disease symptoms occasionally show an improvement of the symptoms after a resection of the tumors.

Key words Thymolipoma · Myasthenia gravis · Surgery · Oncology

Introduction

Thymolipoma is a rare, benign tumor of the anterior mediastinum, accounting for 2%–9% of all thymic neoplasms.1–3 The tumor is characterized by slow, encapsulated growth with no tendency to recur after a complete surgical excision. As thymomas, thymolipomas are sometimes associated with myasthenia gravis, aplastic anemia, hypogammaglobulinemia, lichen planus, and Graves’ disease.4–6 The incidence of myasthenia gravis associated with thymolipomas is between 2.8% and 50%.7–9 The symptoms of myasthenia gravis may improve after the resection of the tumor in some patients.9 In rare cases, a thymolipoma may be associated with thymoma or thymic malignant lymphoma.10,11 This retrospective study reviews the cases of nine patients at a single institution with special emphasis on myasthenia gravis, since myasthenia gravis was the initial presentation in most of these patients.

Patients and Methods

Between 2002 and 2007, 219 patients underwent a resection of the thymus. The resection was performed for different pathologies of the thymus in 127 of those patients. The resection of the thymus was done for non-thymus primary or secondary tumors located in the anterior mediastinum (i.e., mediastinal germ cell tumors, mediastinal goiters, mediastinal cysts, lymphomas, mediastinal metastases) in 93 patients. Among the 127 patients with pathology of the thymus, 92 patients had a thymoma or a thymic carcinoma, 9 patients a thymolipoma, and 26 patients other thymic diseases, such as neuroendocrine tumors, lymphofollicular hyperplasia, numeric hyperplasia, or normal thymus. Twenty-two (23.9%) of the thymoma and thymic carcinoma patients had myasthenia gravis.
In this study, we have evaluated patients with myasthenia gravis and thymolipoma. The preoperative serum acetylcholine antibody (AChR-Ab) titer was elevated in six of seven patients. The largest tumor weighed 2400 g and had a maximum diameter of 33 cm; it was detected by X-ray and confirmed by CT and MRI. The other tumors had a maximal diameter of 33 cm; it was detected by X-ray and confirmed by CT and MRI. The surgical approach was chosen according to the location and extent of the tumor. A median sternotomy was performed in seven patients, and two patients underwent a lateral thoracotomy (patients #1 and #7, see Table 1). A complete surgical resection was achieved in all of the patients, without an extended resection (e. g., resection of the vena cava, right atrium) being necessary. Patient #2 developed suppurative mediastinitis on the 16th postoperative day following the sternotomy. Early aggressive treatment with antibiotic therapy and repeated surgical intervention with closed and open irrigation was necessary. The patient was discharged on the 56th postoperative day. Patient #4 experienced a postoperative exacerbation of myasthenia gravis. The patient was transferred to the department of neurology on the 15th postoperative day. There were no complications as a result of the resection of the thymolipoma in any other patients.

The largest tumor weighed 2400 g and had a maximum diameter of 33 cm; it was detected by X-ray and confirmed by CT and MRI. The other tumors had a maximal diameter between 8 and 14 cm with weight ranging from 66 to 170 g.

Because there was no local recurrence, disease-free survival was congruent with the overall survival. One patient died during follow-up due to esophageal cancer, and all other patients are alive. None of these patients had evidence of recurrence or residual tumor on follow-up. Currently, six patients who initially presented with myasthenia gravis are still being treated with active cholinesterase inhibitors and corticosteroids or other immunosuppressive therapy.

One patient (Table 1) experienced an improvement in myasthenia gravis symptoms after a resection of the thymolipoma. This patient was treated by an oral cholinesterase inhibitor (pyridostigmine bromide) and azathioprine preoperatively, and had no preoperative elevated serum AChR-Ab titer. This patient required no immunosuppressant medication postoperatively.

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Table 1. Patients’ characteristics

<table>
<thead>
<tr>
<th>Patient #</th>
<th>Sex</th>
<th>Age (years)</th>
<th>MG</th>
<th>ID</th>
<th>MG</th>
<th>OS</th>
<th>CT</th>
<th>X-ray</th>
<th>YOO</th>
<th>Weight (g)</th>
<th>Size (cm)</th>
<th>Status</th>
<th>AChR-Ab (nmol/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>36</td>
<td>No</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2002</td>
<td>2400</td>
<td>33 × 22 × 8.5</td>
<td>Alive</td>
<td>n.d.</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>70</td>
<td>Yes</td>
<td>2003</td>
<td>I</td>
<td>Thymic tumor</td>
<td>nt</td>
<td>—</td>
<td>2003</td>
<td>112</td>
<td>14 × 10 × 3</td>
<td>Alive</td>
<td>2.24 (+)</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>54</td>
<td>Yes</td>
<td>2003</td>
<td>IIB</td>
<td>Fatty tumor</td>
<td>nt</td>
<td>—</td>
<td>2003</td>
<td>80</td>
<td>12 × 10 × 2</td>
<td>Alive, sd</td>
<td>7.0 (+)</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>65</td>
<td>Yes</td>
<td>2004</td>
<td>IIb</td>
<td>Fat on CT</td>
<td>nt</td>
<td>—</td>
<td>2004</td>
<td>170</td>
<td>13 × 14 × 1.5</td>
<td>Died, sd</td>
<td>&gt;0.4 (+)</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>60</td>
<td>Yes</td>
<td>2004</td>
<td>IIa</td>
<td>Fat on CT</td>
<td>nt</td>
<td>—</td>
<td>2004</td>
<td>93</td>
<td>12 × 10 × 2</td>
<td>Alive, sd</td>
<td>&gt;20 (+)</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>50</td>
<td>Yes</td>
<td>1990</td>
<td>IIa</td>
<td>Fat on CT</td>
<td>nt</td>
<td>—</td>
<td>2005</td>
<td>65</td>
<td>3 × 2 × 1.5</td>
<td>Alive, sd</td>
<td>15 (+)</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>76</td>
<td>Yes</td>
<td>2005</td>
<td>I</td>
<td>nt</td>
<td>nt</td>
<td>—</td>
<td>2005</td>
<td>66</td>
<td>12 × 6 × 2</td>
<td>Alive, sd</td>
<td>18.5 (+)</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>54</td>
<td>No</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2005</td>
<td>89</td>
<td>14 × 8 × 3</td>
<td>Alive</td>
<td>n.d.</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>48</td>
<td>Yes</td>
<td>2000</td>
<td>IIb</td>
<td>Fatty tumor</td>
<td>nt</td>
<td>—</td>
<td>2007</td>
<td>70</td>
<td>8.5 × 6.5 × 2</td>
<td>Alive, im</td>
<td>(−)</td>
</tr>
</tbody>
</table>

YOO, year of operation; OS, Osserman score; ID, initial diagnosis; MG, myasthenia gravis; CT, computed tomography; nt, no tumor; im, improvement of MG; sd, stable disease of MG; AChR-Ab, acetylcholine receptor antibody; n.d., not defined

*Death due to esophageal cancer

Data were gathered through a retrospective chart review, and all physicians in charge of the patients were contacted for the most recent follow-up. The study was approved by the Institutional Review Board of Heidelberg University.

Imaging was performed by computed tomography (CT) scanning and X-ray at the time of the surgical resection. One patient (Table 1, patient #1) underwent magnetic resonance imaging (MRI).

The following variables were determined and analyzed: age, gender, date of operation, autoimmune diseases and their onset, weight and size of the tumor, and results from chest X-ray and CT of the chest. All imaging results were reviewed by an experienced radiologist. The classification of Osserman and Genkins was applied to all patients preoperatively and during follow-up for clinical assessment of the severity of myasthenia gravis. The histology of all of the resected tumor specimens was reviewed by two histopathologists experienced in thoracic pathology.

Results

A summary of all variables is given in Table 1: The age of the patients ranged from 36 to 76 years (median, 54 years); 5 patients were male and 4 were female. Seven out of nine patients had myasthenia gravis: two patients had an Osserman score of I, three an Osserman score of IIa, and two an Osserman score of IIb.

The preoperative serum acetylcholine antibody (AChR-Ab) titer was elevated in six of seven patients with myasthenia gravis (Table 1). Chest X-ray did not reveal a mediastinal tumor, even after review in all but one case, nor did CT in one case. A positive CT scan revealing a fatty tumor is shown in Fig. 1A. The diagnostic algorithm for evaluating myasthenia gravis yielded a diagnosis of a mediastinal mass in six patients.

The surgical approach was chosen according to the location and extent of the tumor. A median sternotomy was performed in seven patients, and two patients underwent a lateral thoracotomy (patients #1 and #7, see Table 1). A complete surgical resection was achieved in all of the patients, without an extended resection (e. g., resection of the vena cava, right atrium) being necessary. Patient #2 developed suppurative mediastinitis on the 16th postoperative day following the sternotomy. Early aggressive treatment with antibiotic therapy and repeated surgical intervention with closed and open irrigation was necessary. The patient was discharged on the 56th postoperative day. Patient #4 experienced a postoperative exacerbation of myasthenia gravis. The patient was transferred to the department of neurology on the 15th postoperative day. There were no complications as a result of the resection of the thymolipoma in any other patients.

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