Case report - Thoracic general

Matured mediastinal teratoma extending into the cervical neck of an adult

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Abstract
Teratomas have been reported to occur in various sites and organs. Cervical neck teratomas are relatively rare in adulthood, and mediastinal teratomas that extend into the cervical neck are also rare. Therefore, we report a case of a matured teratoma found in the cervical tumor of an adult. A 27-year-old woman was admitted with a cervical soft tumor. Preoperative examination revealed a cystic mass in the upper mediastinum that extended to the thyroid. We diagnosed this as a thymic or foregut cyst and removed the tumor via a collar incision. Histological examination revealed a benign mature teratoma.

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1. Introduction
Teratomas have been reported to occur in various sites and organs. Cervical neck teratomas are relatively rare in adulthood. Mediastinal teratomas that extend into the cervical neck are also rare. We report a case of a matured teratoma that was found in a cervical neck tumor of an adult.

2. Case report
A 27-year-old female was admitted to our hospital with complaints of a neck mass that was first noticed 6 months earlier. She reported that the mass rapidly increased in size over the previous month. Physical examination detected only a soft and elastic mass that was 5 × 3 cm in size in the anterior cervical neck. Hematological evaluations, blood chemistries, and thyroid function tests were normal. Chest roentgenogram revealed an abnormal shadow in the right upper mediastinum (Fig. 1a). Computed tomography (CT) revealed a cystic tumor adjacent to the right lobe of the thyroid. It compressed the trachea to the left anterior side and its wall was slightly enhanced (Fig. 1b). The cystic contents were demonstrated to be of higher intensity than muscle on T1-weighted magnetic resonance imaging (MRI). The cystic contents were also hyper intense on T2-weighted images. The tumor was surrounded by the brachiocephalic artery, right and left brachiocephalic veins, and trachea. Ultrasonography (US) of the neck revealed a cystic tumor with partially solid portions. Yellowish muddy fluid was obtained through percutaneous needle aspiration. Bacterial and cytological examinations were both negative. Through preoperative investigations, we suspected the diagnoses of thymoma, thymic cyst, or foregut cyst.

3. Operative technique
General anesthesia was administered with oral intubation. The patient was placed in the supine and cervically extended position. The operation was performed via a collar incision approximately 10 cm in length. The tumor was identified after dissecting through the platysma. It did not invade surrounding tissues or cervical vessels. The upper border of the tumor was separated from the thyroid. Complete dissection around the tumor revealed that it originated from the right upper pole of the thymus. The right recurrent nerve was identified and preserved entirely. The tumor was removed completely through the collar incision after separation from the thymus. Intra-operative histological examination of frozen sections revealed the tumor to be a matured teratoma. Duration of the operation was 165 min and blood loss was 110 ml.
The tumor consisted of yellow fluid approximately 150 ml in quantity. A histological examination of the permanent specimen showed that all the composite elements were matured. It also revealed keratinized, stratified squamous epithelium, pilosebaceous units, bronchial or gastrointestinal epithelium, and cartilage (Fig. 1c). The tumor was diagnosed as a matured cystic teratoma without malignancy.

There were no major complications and the patient was discharged 7 days after the operation. No sign of local recurrence has been observed 6 months after the operation.

4. Discussion

Teratomas have been reported to occur in various sites and organs: ovaries, testes, the retroperitoneal region, anterior mediastinum, and the presacral and coccygeal regions [1]. However, cervical neck teratomas have been reported to comprise of only 3% of all teratomas [2]. Moreover, the majority of cervical neck teratomas arise in neonates or infants, and these teratomas are reported to be relatively rare in adults, as small as 10.6% of all cervical neck teratomas [2]. They have been reported to be highly malignant with very poor prognoses [3].

On the other hand, mediastinal teratomas are representative of disease in the anterior mediastinum. These also include thymomas, lymphomas, and germ cell tumors. However, they infrequently develop and extend into the cervical neck. Lewis et al. reviewed 86 benign mediastinal tumors and reported that only five cases (5.8%) had a neck or chest deformity [4]. Through our investigations, there have only been two other cases that presented in the same form as our case [5,6]. Nonetheless, cystic tumors in the cervical neck are often encountered in adulthood.

When we encounter cystic tumor in cervical neck, we should consider various diseases shown in Table 1. These diseases are divided into two groups based on their original site. If the tumors have originated from cervical neck, we should consider papillary carcinomas of the thyroid with cystic changes, follicular adenomas of the thyroid, bronchial cysts, lymphangiomas, dermoid cysts, and others [2]. On the other hand, the mediastinal tumors with cystic lesion consisted of the following diseases: thymic cyst, thymoma with cystic change, mediastinal teratoma, and branchial cyst. For diagnosis of a confusing tumor like teratoma, various examinations should be applied and analyzed carefully.

Calcified structures in radiological images were thought to be useful, but only 26% of patients with matured teratomas have been reported to present with the typical shadow [4]. On the other hand, partly cystic lesions with solid structures and fat component in cystic tumors on CT have been reported to be specific for teratomas [7].

MRI also showed lipomatous elements in the tumor. In addition, MRI was also very useful in evaluating

| Table 1 | Differential diagnosis of cystic tumor in cervical

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<tr>
<th>Original site</th>
<th>Diagnosis</th>
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<tr>
<td>Neck</td>
<td>Papillary carcinoma of thyroid with cystic formation</td>
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<td></td>
<td>Follicular adenomas of thyroid</td>
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<td>Bronchial cysts</td>
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<td>Lymphangiomas</td>
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<td>Mediastinum</td>
<td>Thymic cyst</td>
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<td>Thymoma with cystic generation</td>
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<td></td>
<td>Foregut cyst</td>
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<td>Teratoma</td>
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* In encountering a cystic tumor in cervical neck, these diagnoses should be considered. It would be useful in making differential diagnosis to divide these diseases into two groups in relation to their original site.
the relationship of the tumor to the great vessels and vital structures in the mediastinum [5,6]. Matured teratomas have occasionally involved surrounding structures, though it has classically been classified as a benign tumor [4]. MRI has often provided helpful findings in considering surgical strategies.

US is very easy and useful in evaluating cervical neck abnormalities. However, sonographic findings of teratomas have not been well delineated in comparison to other cervical tumors, because teratomas in the cervical neck are not common. This procedure has been applied for cervical neck teratomas in fetuses and neonates. Sonography has shown solid and cystic lesions as typical findings in teratomas [8].

In addition to these findings, chemical analyses of the cystic fluid has shown increases in the levels of amylase and several tumor markers such as carcinoembryonic antigen, carbohydrate antigen 19-9, and neuron specific enolase [3,9,10]. Pancreatic tissue involved in matured teratomas has been thought to produce such substances. Cytological and bacterial examinations of the fluid were usually negative and have not been useful in the differential diagnosis of teratomas.

In our case, we did not obtain an exact diagnosis preoperatively. However, we would have been able to make an accurate diagnosis with the CT and sonography findings if we had considered this common histological type.

In fact, several authors have reported cervical neck teratomas in adulthood and mediastinal teratomas that develop into the cervical neck [3–6]. Yet, teratomas alone are not so rare. Moreover, mediastinal teratomas have been thought to be one of the most common diseases of anterior mediastinal tumors. Clinicians should be reminded of this ordinary histological type in making the diagnosis of a cystic tumor in the cervical neck that extends from the mediastinum.

References


